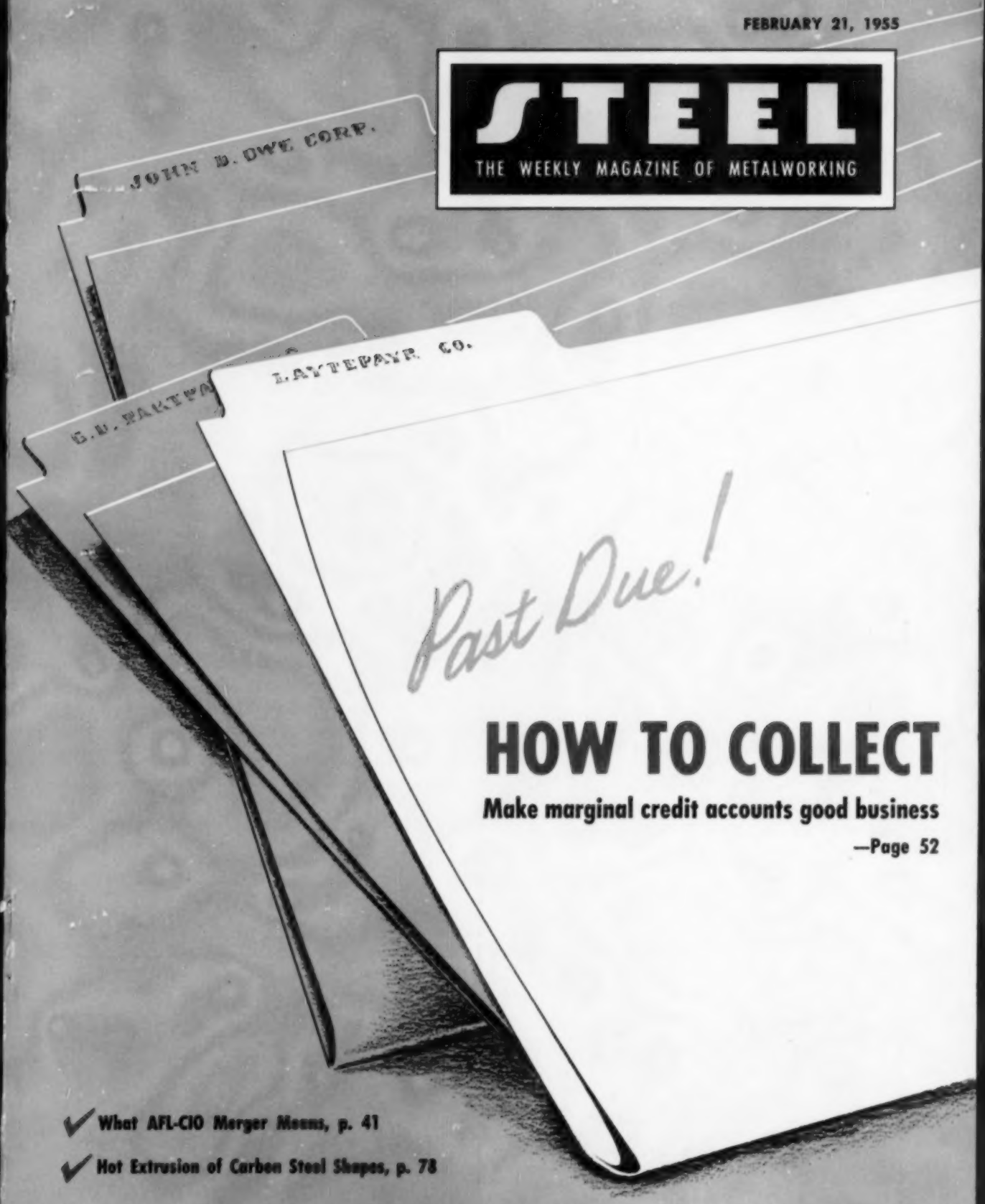
FEBRUARY 21, 1955

STEEL

THE WEEKLY MAGAZINE OF METALWORKING



HOW TO COLLECT

Make marginal credit accounts good business

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✔ What AFL-CIO Merger Means, p. 41

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STOP CRANES SAFELY with EC&M

DYNAMIC BRAKING BRIDGE-STOP CONTROL

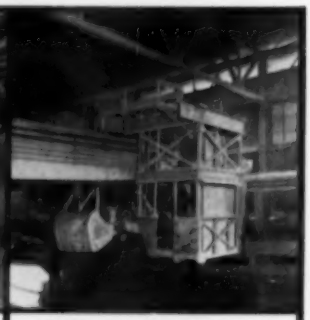
POSITIVE STOPPING by the same motors that drive the crane . . . even when power fails or overload relays trip.

Now . . . collision between cranes, crashing into the end-bumpers, and wheel-sliding stops can be avoided by the use of simple equipment. Crane motors are automatically converted into self-excited generators by this EC&M Bridge-Stop Control to provide quick, positive stopping. Transition to dynamic braking occurs instantly on power failure or when overload relays trip. Braking is not dependent on an outside source of power.

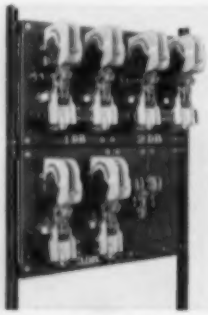
This EC&M system of control is fast and equally effective when traveling in either direction. Graduated braking is maintained throughout the entire stopping period by a pulsating spring-closed contactor . . . an exclusive EC&M feature. On icy, slippery rails, wheels do not slide to a stop . . . instead, this system automatically releases and then re-applies retardation to give a quicker stop than when the wheels remain locked.

EC&M Dynamic Braking Bridge-Stop Control is easily applied to new and old cranes to provide power-failure emergency operation. It is also designed for service-braking operation which is selectively applied by the operator or end-zone limit switches.

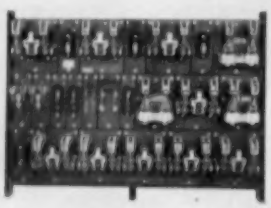
Eliminate hazards due to slippery rails . . . inability of operator to reach foot-brake in time when power fails.



Obtain smoother, safer operation when you change over to EC&M Dynamic Braking Bridge-Stop Control.



For existing installations, this panel provides graduated dynamic braking for quick, sure stops.



Complete Duplex (2-motor) Controller including EC&M Dynamic Braking Bridge-Stop Control.

6149

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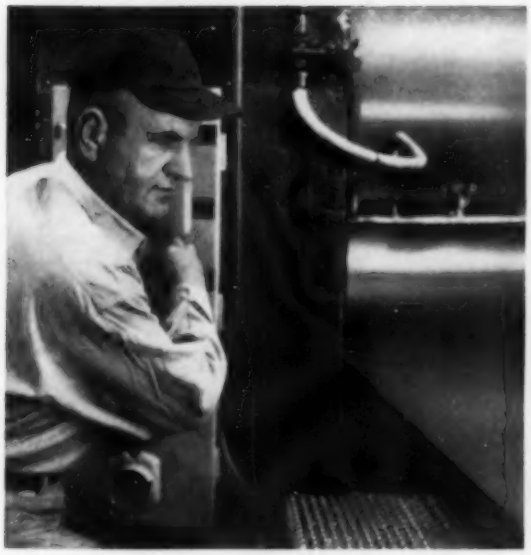

He puts "oomph" into steel sheets

Keeping a watchful eye on the sheet as it squeezes through the rolls is Duke, temper-mill roller at our Lackawanna Plant. Duke's job is to skin-pass the sheet through the temper mill to give it "oomph"—the exact temper and surface finish it will need for subsequent drawing operations.

When the newly-annealed steel enters his mill, it is soft and limp, and buckles or wrinkles at the drop of a hat. This means that the proper tension for rolling must be maintained at all times. Then too, the mill must be precisely set to reduce the thickness about 0.5 pct, or slightly more, depending on the customer's requirements for gage and temper.

On top of all that, Duke knows that his temper mill is the last step in the actual making of sheets. Thus all the quality control built in by other members of the team in the preceding steps is riding on this final operation.

It takes crack men like Duke to turn out mile upon mile of top-quality sheets. And at our Lackawanna and Sparrows Point plants, you'll find just such men all along the line, from slab-heating furnace to shipping platform. Men who get real satisfaction from doing good work; men with the will to produce the finest hot-rolled and cold-rolled sheets made anywhere.

A team imbued with that attitude, given the best tools money can buy and the best steel we know how to make, will give you a good product, every time. That's why you can look to Bethlehem for sheets that, at the very least, compare favorably with the best the industry is making. Sheets that are as finely finished, as easy forming, as true to gage, as any on the market. Sheets as fine as you can buy!

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM SHEETS

BETHLEHEM STEEL

Here's Power Products Corporation's popular 2-cycle engine that delivers 2 horsepower.

How much would you guess it weighs? Fifty pounds? Thirty? Twenty? Guess any of these and you'd be wrong. It weighs just sixteen pounds.

This remarkable power to weight ratio is made possible, in a large measure, through the use of ball bearings at both ends of the crankshaft. Power Products engineers, like many others, recognized the inherent advantages of the 2-cycle principle—lightweight and compactness. The use of ball bearings on the crankshaft enabled them to virtually eliminate radial play with its related problems previously found in 2-cycle engines and produce a dependable small 2-cycle industrial engine.

The application of SKF bearings to this and other Power Products 2-cycle engines helps give the engines longer life, easier starting, consistent operation, as well as accurate timing, hotter spark and less friction which means more power.

SKF Field and Home Office Engineers know a lot of places where anti-friction bearings should be used to make your product better—places where their application produces benefits as it does for Power Products. Any of them, without obligation, will analyze the design of your product and perhaps show you how to make it better. »»»

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Handling bed casting for 2500-ton forging press are two Macwhyte ATLAS Type 1 Round-Braided Wire Rope Slings.

A SLING DESIGNED TO HANDLE EASILY WILL HELP YOU HANDLE LOADS faster. That's the reason why flexibility, lightness, and *handling ease are results of the basic design* of Macwhyte ATLAS Round-Braided Slings.

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The Macwhyte Sling Catalog illustrates many standard designs in Round-Braided, Flat-Braided, Single-Part, and Grommet Slings.

Recommendations for special designs will be supplied by Macwhyte Sling Engineers.

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Ask for Sling Catalog S-8

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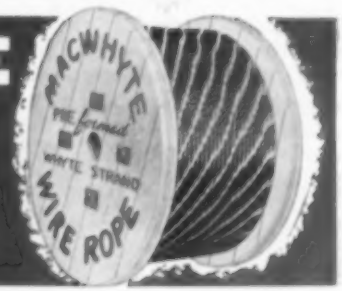

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IDLERS 18" DIA
DRIVER PULLEY 9⅞" DIA
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24" x 3 ply Rayon Stacker Belt with ⅜" cover including Nylon transverse breaker, 7' 9" NEL

It Outthrows 'Em All—*IN THE LIMESTONE LEAGUE!*

RUBBER-ARMED PITCHERS are much more common in industry than in the big leagues. They are a special kind of conveyor belt that travels at high speed and throws, not curve balls or sliders, but a variety of bulk materials from one point to another.

One such thrower, however, was a definite curve ball to its owners. It was used to bulk-load boxcars with hot, crushed limestone at the rate of 2500 tons per month. The trouble was no belt could stand up under the excessive dust, heat and abrasion for much more than *two months*. Finally they called in the G.T.M.—Goodyear Technical Man—who recommended a belt designed for the job.

The G.T.M.'s belt served up *27,500 tons* before retiring—threw *more than five times as much* limestone as previous belts. And it ran much truer—cut training and maintenance to the bone. How can the G.T.M. help you with your conveyor belt problem? You can contact him through your Goodyear Distributor or Goodyear, Industrial Products Div., Akron 16, Ohio.

CONVEYOR BELTS by

GOODYEAR

THE GREATEST NAME IN RUBBER

This Week in Metalworking

STEEL
THE WEEKLY MAGAZINE OF METALWORKING
Vol. 136 No. 8 February 21, 1955

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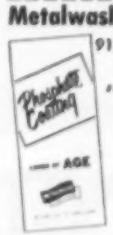

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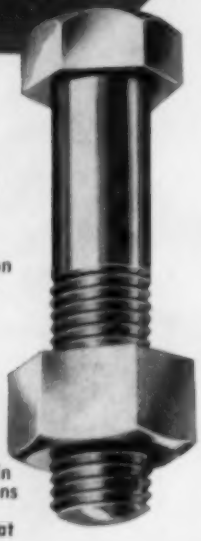

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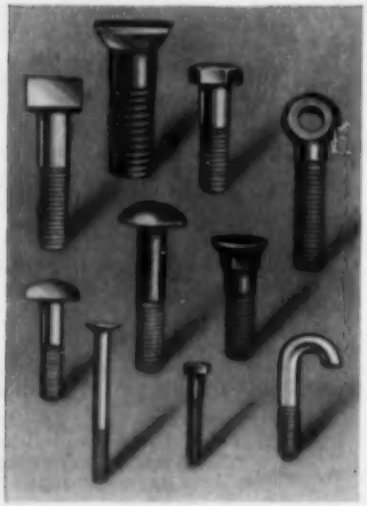

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behind the scenes

He Asked For It

The long arm of coincidence has reached out and touched M. S. Bailey, Machine Products Corp., Montreal, Quebec. Mr. Bailey had communicated with us earlier, expressing a desire to see more news about Canadian metals and prices in STEEL, and do you know what happened? We opened at random the Annual Report of the Smithsonian Institution (yes indeed, we really get some fascinating things in the mail at this office) and ran smack into a veritable archeological tizzy concerning Ontario iron and its staggering price increase.

James Edward Dodd of Port Arthur said he found a Viking sword and some other odds and ends under a birch stump; J. M. Hansen complained that the objects were suspiciously like those for which he advanced $150 as a loan to an indigent Norwegian lieutenant. At present these iron objects are resting in the Royal Ontario Museum of Archeology at Toronto. Curators stare at them longingly and murmur, "Is you IS or is you AIN'T the Viking McCoy?"

Johannes Brondsted, Director of the Danish National Museum, thinks the sword came from Norway, but is inclined to think it was brought by modern Vikings out to make a fast buck. Hansen never got his $150 back, and at this writing the items are priced out of sight. A full report was written in Denmark, reprinted in the Smithsonian Report, and herewith condensed simply because Mr. Bailey wanted to see in STEEL some mention of Canadian metal.

An Exciting Report

Before we drop the Smithsonian Report, we'd like to add that it contains some dandy information well worth your interest. In the Secretary's Report, for instance, we learn that Franklin Fenenga, archeologist, spent most of the summer digging up dead indians from the Stone Age, and presenting papers on archeological field methods, and taking part in seminars, and postulating theories about persons who had been dead far too long to care whether or not Franklin was coming in on the beam. He wound up the summer with a great flourish: he wrote "The Weights of Chipped-Stone Projectile Points, A Clue to Their Functions," and acted as preceptor of the Indian Project of two groups of Campfire Girls.

Comfort Your Debtors

From the seller's point of view, collections can sometimes be a problem. Assistant Managing Editor John Morgan brought up the subject at a staff meeting; it was kicked around, refined and finally organized. The result was a provocative story by one of our Chicago editors, Bill Dean, about slow collections, and measures being taken by various metalworking organizations to recover debts without seriously disturbing their debtors' ability to pay. While there is no point in the attempt to get blood from a stone, there is equally no point in the attempt to drain operating capital from shaky debtors. We won't try to outline the story here, because we couldn't do it justice. Be sure to look it over: you'll find the page number on the cover.

The Heat's On

On Jan. 24-25 STEEL Editor Irwin Such and Technical Editor Al Gray found themselves in Detroit attending the Annual Meeting of the Industrial Heating Equipment Association. In weather scarcely more than 15° above zero it seemed singularly appropriate to assemble the heating people, but it was noted that a chill settled with the news that sales were off 24.5% in 1954 compared with 1953. Temperatures rose again when prospects indicated 1955 sales might be 10 to 15 per cent ahead of 1954. Our editors reported that more heat treating equipment is being placed in machining lines as part of the trend toward automation, and that high temperatures and protective atmospheres are creating a refractory problem.

Before we find ourselves stumbling about in the technical field, let us abandon it and return to more familiar ground—namely, office gossip. News about the 9th floor is that large contingents of STEEL personnel are going on a diet. That's odd: Have you ever seen a fat editor?

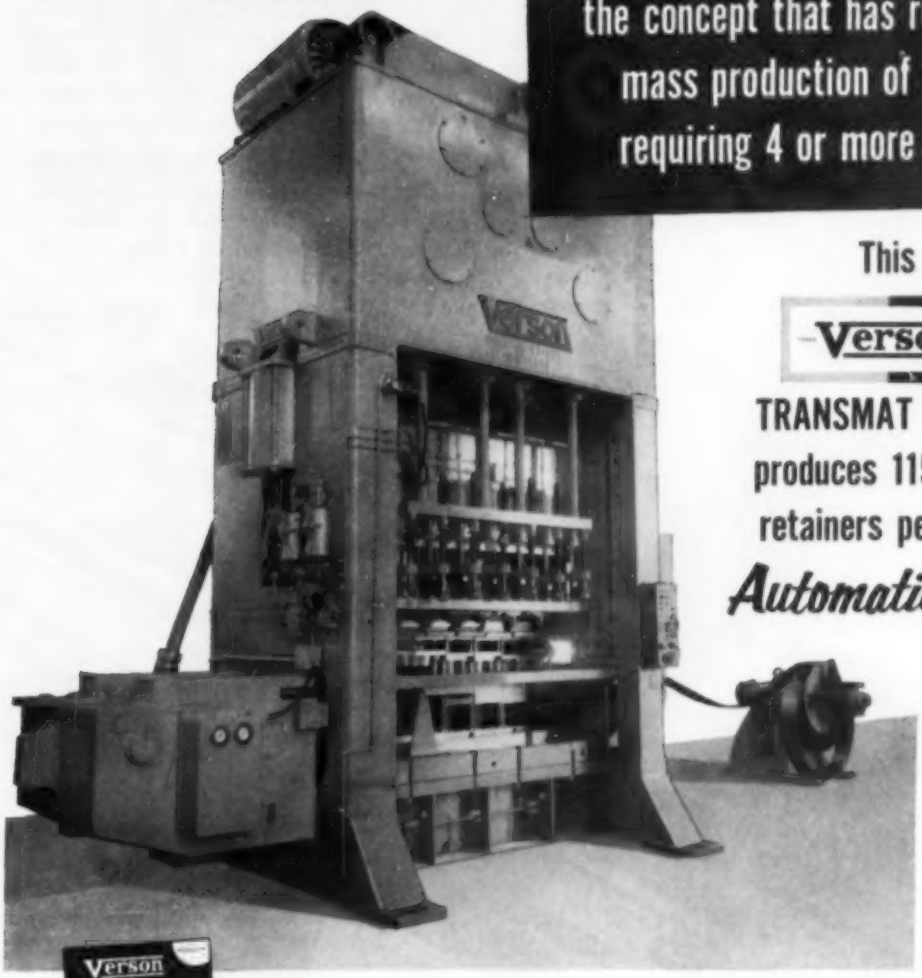
Shrdlu

(Metalworking Outlook—Page 35)

Verson

TRANSMAT FORMING–

the concept that has revolutionized mass production of stampings requiring 4 or more operations



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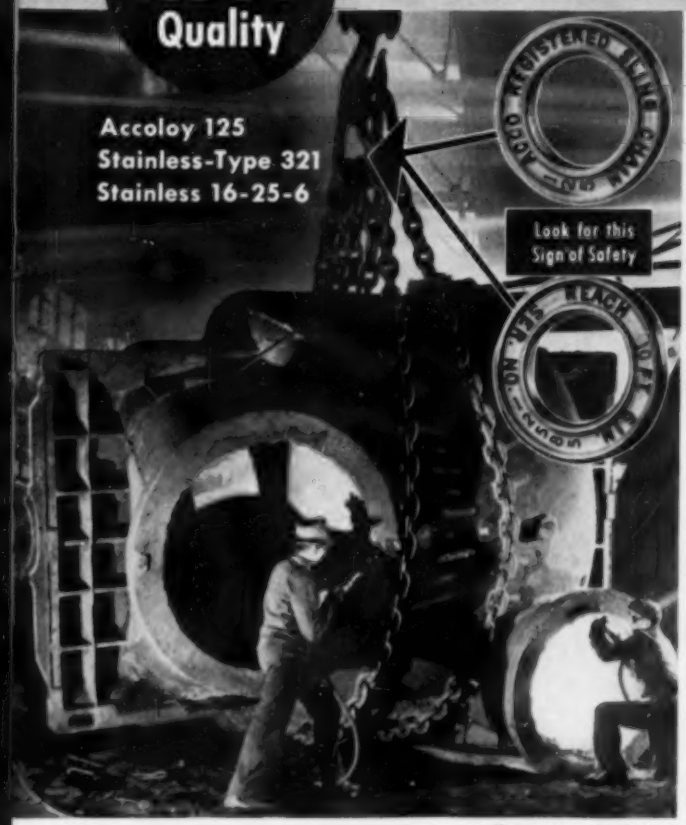

Photo courtesy Allis-Chalmers

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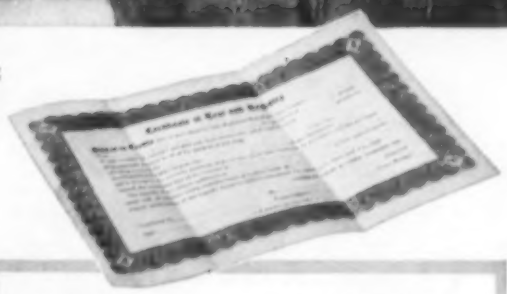

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for Better Value

WHAT'S THE
BEST WAY TO STRIP
METAL PARTS
IN LARGE VOLUME?
See page 9

Are you looking for better methods for stripping paint?

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Oakite's FREE booklet on "How to STRIP PAINT" will help you find more efficient procedures. You'll want to read more about:

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¶ What's the best way to strip large areas of structural metal where a steam supply is available? *See page 5.* Where steam is not available? *See page 7.*

¶ What are the best ways to prepare stripped metal for repainting? *See page 11.*

¶ What strippers are best for removing oil-base paints?... Synthetic enamels, alkali-resistant plastics or resin-based paints?... Japans, wrinkle finishes, nitrocellulose lacquers, alkyds, phenolics and ureas? *See page 12.*

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LETTERS
TO THE EDITORS

Keep Up with the Government

I read your article, "U. S. Tries New Ways To Auction Tools," (Dec. 6, p. 80) by E. C. Kreutzberg, Washington editor. I would like to find out where I might obtain a list of these sales.

James H. Wolfston
works manager
Ideal Electric Mfg. Co.
Mansfield, O.

• *To keep informed about government sales, you can subscribe to the "Daily Synopsis of U. S. Government Proposed Procurement, Sales and Contract Awards." Subscription price is $7 per year. Send orders to the Commerce department, Room 1300, 133 W. Van Buren St., Chicago. Then, you may want two booklets put out by the Defense department: "Purchased Items & Purchasing Locations of the Department of Defense" and "How To Sell to the Department of Defense." You may get them free by writing to Central Military Procurement Information Office, The Pentagon, Washington 25.—ED.*

Oriented Toward Titanium

I was interested in your editorial, "For Titanium: New Horizons" (Dec. 27, p. 23). We are quite curious about titanium and its refinement because we manufacture motor-generator sets for the electrolytic industry for low voltage plating and anodizing applications. This would also include current supply for electric arc final reduction as far as the metallic titanium is concerned.

Can you tell us where are the titanium deposits and where is Republic Steel Corp.'s plant in southwest Mexico?

James F. Carland
executive vice president
Chandeysson Electric Co.
St. Louis

• *Republic Steel's properties are in the state of Oaxaca two miles from the village of Pluma Hildago. That's about 350 air miles from Mexico City and 12 miles inland from Puerto Angel, a Pacific Coast fishing village. A concentrating plant will be built in the same area.—ED.*

Incentive from Profit Sharing

You may want to advise your readers of some facts relative to profit sharing which are the record of actual experience.

American Velvet Co. is of the opinion that a good part of the reason for its excellent showing in the textile industry in New England during the past decade has been the result of profit sharing, and most particularly the attendant labor-management relations which can only grow in an atmosphere of sincerity of purpose resulting from the act of sharing profits.

In the practice of profit sharing here, we have steadfastly steered clear of the

(Please turn to page 12)

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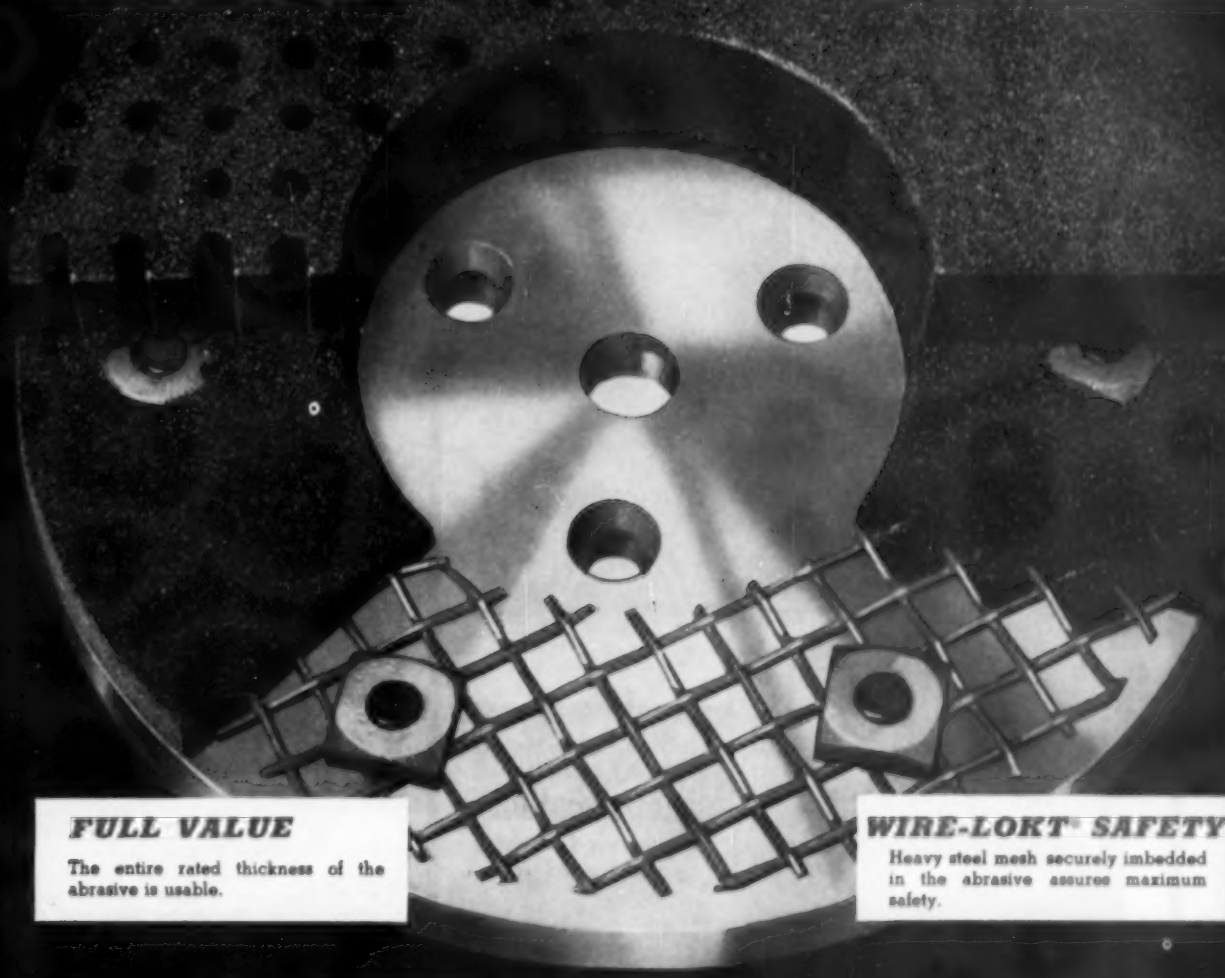

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Heavy steel mesh securely imbedded in the abrasive assures maximum safety.

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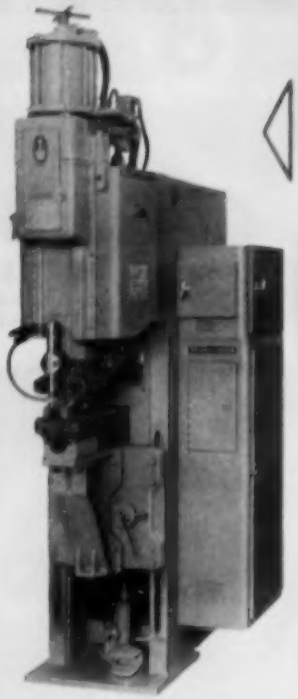

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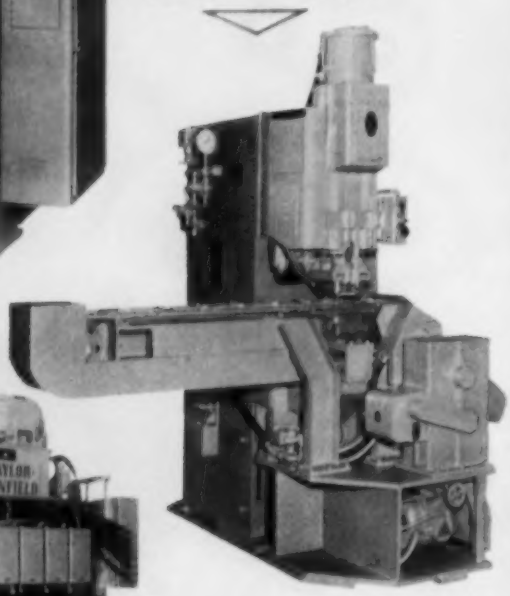

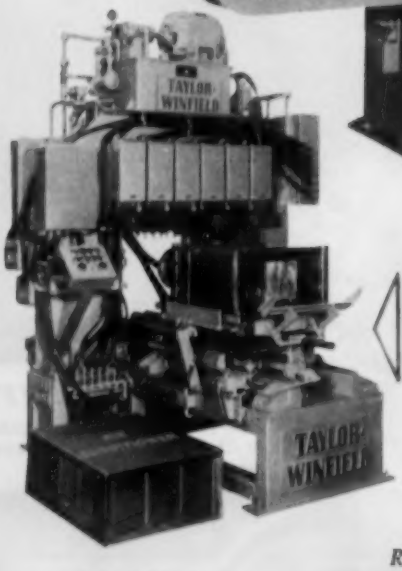

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Volume production at lowest unit cost.

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RESISTANCE WELDERS

THE TAYLOR-WINFIELD CORPORATION WARREN, OHIO

LETTERS

(Concluded from page 10)

term "bonus." The Winston Dictionary defines "bonus" as a "payment in excess of what is regular or stipulated; a premium; a dividend . . ." Neither premium nor dividend describes the nature of profit sharing. Each individual in the plant, both hourly-rated and salaried, knows at the beginning of the year exactly what portion of such profits as he will help to make will accrue to him. Basic salary is not related to the amount of profits accruing to the individual in a direct relationship throughout the executive group. In the higher brackets, furthermore, the larger portion of the salaries accrues from profits. The incentive value of sharing in profits is thus not diluted in our plan here.

Finally, a retirement fund plays no part in executive profit sharing; however, retirement does become a part, automatically, of hourly-rated employees' profit sharing. The method employed here is the distribution of two-thirds of the hourly-rated employees' profit sharing pool in cash and the transfer of one-third thereof into a retirement fund annually.

It is suggested that this information be distributed promptly as clarification of the erroneous statements made in your story, "Trends in Executive Compensation," (Oct. 18, p. 53).

Clarence A. Wimpfheimer
chairman of the board
A. Wimpfheimer & Bro. Inc.
Stonington, Conn.

• *Thank you for your interesting case study. We agree that the profit-sharing plan is not a bonus, particularly when used in a compensation plan for production workers. However, our findings in the story you mentioned were that management in many companies did consider profit-sharing a bonus arrangement. That is the reason we labeled it as such in our story.—ED.*

Short Question, Shorter Reply

You report prices on a long list of nonferrous metals but do not report on silver. Will you please advise why silver is omitted?

Myron Powers
manager of purchasing
W. L. Maxson Corp.
Long Island City, N. Y.

• *It would be a good idea to carry silver prices. We started them with the Feb. 7 issue, p. 174.—ED.*

Forecasting a Storm

We would like to reprint your story, "U. S. Use of Technical Data Brews Storm," (Jan. 31, p. 41) for internal use within the institute. (Industry agrees that the military services need some technical data, but it also believes that the government request for "all-inclusive" information is not justified.)

Charles Stewart
secretary
Machinery & Allied Products Institute
Washington Office
Washington

• *Permission granted.—ED.*

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STRONGER THAN YESTERDAY'S STRONGEST!
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WITH THE DEVELOPMENT of Roebling type 1105 wire — the finest high carbon rope wire ever produced — Roebling leads the field in bringing American industry the unprecedented efficiency and economy inherent in its new **ROYAL BLUE** Wire Rope.

★ Roebling is ready to supply the new **ROYAL BLUE** Wire Rope in EVERY DIAMETER from ¼" to 3½" and in EVERY STANDARD CONSTRUCTION with an independent wire rope core.

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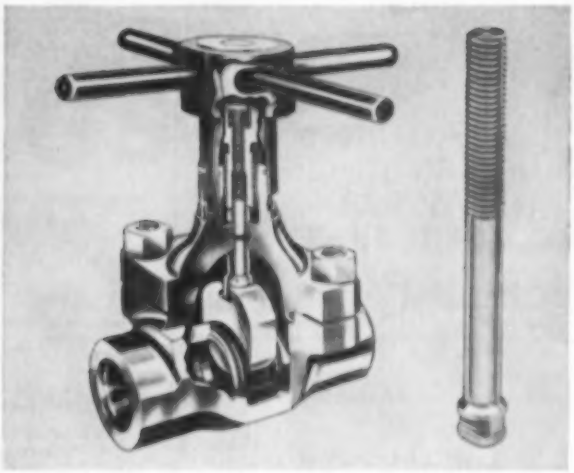

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American Cancer Society

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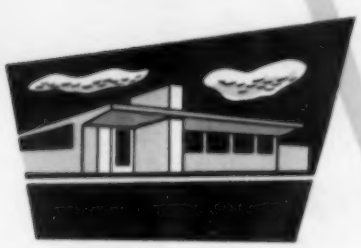

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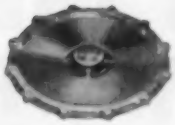

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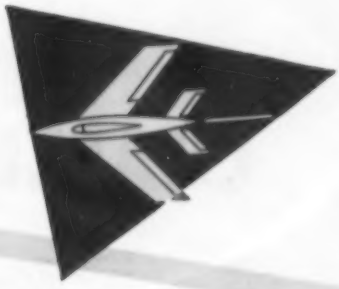

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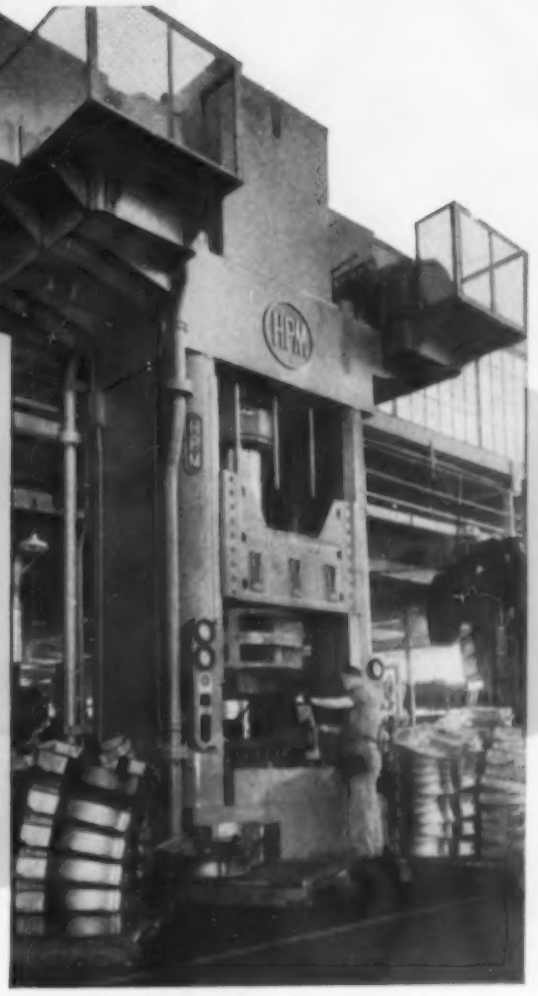

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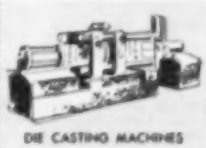
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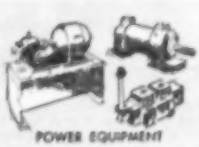
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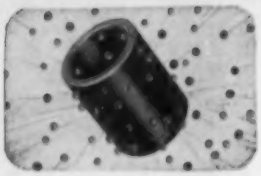

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CALENDAR
OF MEETINGS

February 28-March 1, American Supply & Machinery Manufacturers' Association Inc.: Regional meeting, Warwick hotel, Philadelphia. Information: Hunter-Thomas Associates, 2130 Keith Bldg., Cleveland 15.

February 28-March 2, American Management Association: Special conference on electronics, Hotel Statler, New York. Association address: 330 W. 42nd St., New York 36. Vice president-secretary: James O. Rice.

February 28-March 4, Pittsburgh Conference on Analytical Chemistry & Applied Spectroscopy: Hotel William Penn, Pittsburgh. Information: L. D. Frederickson Jr., Aluminum Research Laboratories, P. O. Box 772, New Kensington, Pa.

March 1-2, American Society of Mechanical Engineers: International congress on air pollution, Hotel Statler, New York. Society address: 29 W. 39th St., New York 18. Secretary: C. E. Davies.

March 1-3, Society of Automotive Engineers Inc.: Passenger car, body and materials meeting, Sheraton-Cadillac hotel, Detroit. Society address: 29 W. 39th St., New York 18. Secretary: John A. C. Warner.

March 7-11, National Association of Corrosion Engineers: Annual meeting and exhibit, Palmer House, Chicago. Association address: 1061 M & M Bldg., Houston 2. Secretary: A. B. Campbell.

March 8-10, Instrument Society of America, Pittsburgh Section: Instrumentation in the iron and steel industry, Hotel William Penn, Pittsburgh. Information: A. F. Robbins, combustion engineer, Crucible Steel Co., Midland, Pa.

March 10-11, Porcelain Enamel Institute: Pacific coast conference, Biltmore hotel, Los Angeles. Institute address: 1346 Connecticut Ave., N.W., Washington. Secretary: John C. Oliver.

March 13-18, National Electrical Manufacturers Association: Winter meeting, Edgewater Beach hotel, Chicago. Association address: 155 E. 44th St., New York 17. Managing director: W. J. Donald.

March 14-16, Society of Automotive Engineers Inc.: Production meeting and forum, Netherland Plaza hotel, Cincinnati. Society address: 29 W. 39th St., New York 18. Secretary: John A. C. Warner.

March 14-18, American Society of Tool Engineers.: Western industrial exposition, Ambassador hotel and Shrine Auditorium, Los Angeles. Society address: 10700 Puritan Ave., Detroit 21. Executive secretary: Harry E. Conrad.

March 15-16, Steel Founders' Society of America: Annual meeting, Drake hotel, Chicago. Society address: 920 Midland Bldg., Cleveland 15. Secretary: George K. Dreher.

March 15-17, American Institute of Electrical Engineers: National conference on electrical utilization of aluminum, William Penn hotel, Pittsburgh. Institute address: 33 W. 39th St., New York 18. Secretary: N. S. Hibshman.

March 16-18, Pressed Metal Institute: Annual meeting and exhibit, Carter hotel, Cleveland. Institute address: 2860 E. 130th St., Cleveland. Managing director: Orrin B. Werntz.

March 16-19, Industrial Diamond Association of America: Annual meeting, Hollywood Beach hotel, Hollywood Beach, Fla. Association address: 124 E. 40th St., New York. Secretary: Athos D. Leveridge.

March 20-23, National Association of Waste Material Dealers Inc.: Annual meeting, Conrad Hilton hotel, Chicago. Association address: 271 Madison Ave., New York. Secretary: Clinton M. White.

March 21-23, Association of Iron & Steel Engineers: Western meeting, St. Francis hotel, San Francisco. Association address: 1010 Empire Bldg., Pittsburgh 22. Managing director: T. J. Ess.

March 22-24, International Acetylene Association: Annual meeting, Shamrock hotel, Houston. Association address: 30 E. 42nd St., New York 17. Secretary: H. F. Reinhard.

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COLD-ROLLED SHEETS FROM

Newport Steel

Cold-rolled sheets are now being produced at Newport . . . our answer to a long-time demand by customers who find our hot-rolled products meet their most exacting requirements in quality, economy and service. These sheets are being rolled on a reversing cold mill just installed as part of our continuing program of expansion and modernization. Seventy years old in experience, new in facilities and methods, Newport is strategically located in the heart of the nation's greatest industrial growth—a dependable source for all the products listed here. You will profit by discussing your requirements with Newport before you buy more steel.

PRODUCTS OF NEWPORT STEEL

Cold-Rolled Sheets
Hot-Rolled Steel in Coil
Hot-Rolled Pickled Steel in Coil
Hot-Rolled Sheets
Hot-Rolled Pickled Sheets
Galvanized Sheets
Galvannealed Sheets
Colorbond Sheets
Electrical Sheets
Alloy Sheets and Plates
Electric Weld Line Pipe
Roofing and Siding
Eave Trough and Conductor Pipe
Culverts

ECONOMICAL WATERAIL DELIVERY

Newport Steel is situated on the Mississippi-Ohio River system and the great Cincinnati rail hub. With the advantage of location, new river barge facilities and seven major railroads, Newport gives economical, dependable delivery to the entire area of the Middle West and South.

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NEWPORT, KENTUCKY

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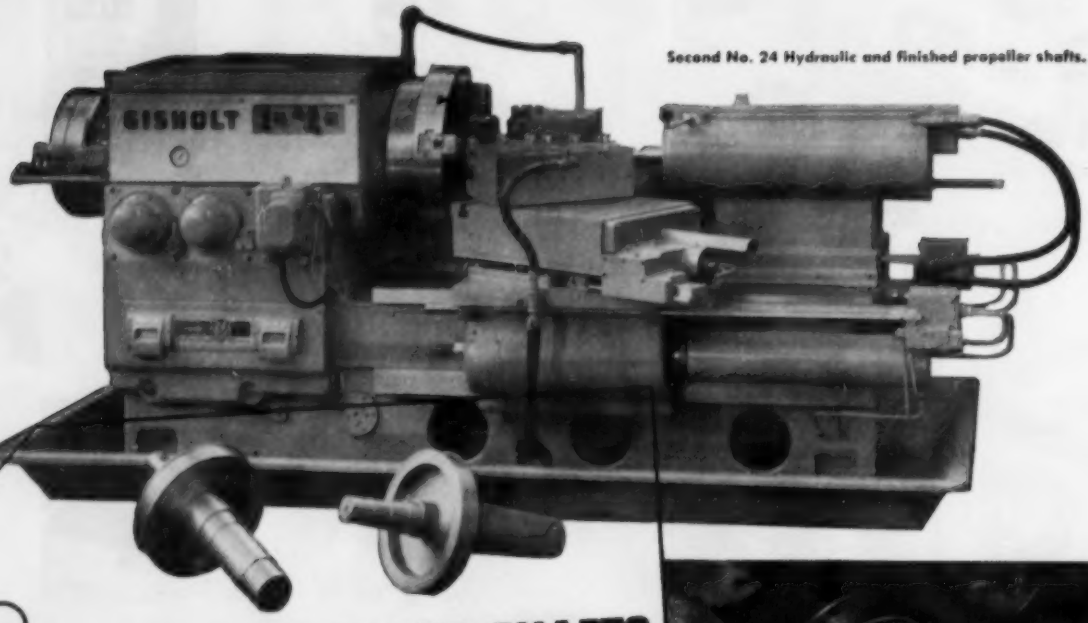
Modern business paper editing begins with front covers that invite readers inside

STEEL PENTON BUILDING, CLEVELAND 13, OHIO

A PENTON PUBLICATION



Second No. 24 Hydraulic and finished propeller shafts.

AIRPLANE PROPELLER SHAFTS AT BARGAIN PRICES!

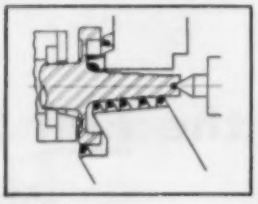
from GISHOLT No. 24 AUTOMATIC LATHES

First No. 24 making chips on small end of shaft.

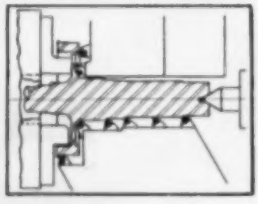
For speed and precision on these hefty drive gear and propeller shafts, production is divided between a pair of Gisholt No. 24 Hydraulic Automatic Lathes. The first machine gets the 275 lb. steel forging for nine different turning, chamfering, and facing operations on the 16" gear blank and five-shaft diameters. 12 minutes later, the part moves to the second machine where nine tools perform similar work on the other side of the flange. Time again is 12 minutes.

Together, the two No. 24 Hydraulics remove a total of 75 lbs. of material. One man operates both machines. Another tough job handled to perfection by these high production machines.

The Gisholt No. 24 Hydraulic, like the famed smaller No. 12 combines ease of setup with exceptional speed and accuracy—all with fully automatic operation that means low costs on any job. If you have work up to 24" diameter, you should have full details on the rugged, powerful, No. 24 Automatic.



Tool arrangement for first operation.



Tool arrangement for second operation.

THE GISHOLT ROUND TABLE

represents the collective experience of specialists in machining, surface-finishing and balancing of round and partly round parts. Your problems are welcomed here.

GISHOLT MACHINE COMPANY Madison 10, Wisconsin

TURRET LATHES • AUTOMATIC LATHES • SUPERFINISHERS • BALANCERS • SPECIAL MACHINES

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snagging wheels

with Patented Reinforcing Flanges...

Rugged, high speed resinoid bonded wheels . . . strong enough to take more than double the force usually encountered in grinding under normal conditions of use. Simonds Reinforcing Flanges prevent radial cracks as wheel wears down to stub. Available in wheels of 6", 10" and 12" hole sizes. Send for bulletin ESA 154 "Simonds Red Streak Flanges" and name of your distributor.

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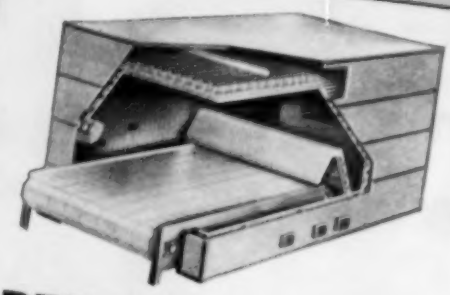
MOIST FUEL CELLS

An important application of B-L unit-suspended walls and arches is found in furnaces where a fuel with a high moisture content is burned. Although designed primarily for use in cane sugar countries for bagasse burning, these furnaces have proven so successful in other fields such as the burning of bark and wet wood refuse.

BIGELOW-LIPTAK *Corporation*

UNIT-SUSPENDED WALLS AND ARCHES

In Canada: BIGELOW-LIPTAK OF CANADA, LTD., *Toronto, Ontario*



DRYER FURNACES

A tough assignment for a furnace is to stand up under the every-day beating of heat in drying applications. B-L's streamlined thin wall dryer furnace does it—cuts maintenance to boot. It furnishes heat for drying coal, sugar, salt, lumber, chemicals.

BIGELOW-LIPTAK *Corporation*

LOWEST MAINTENANCE

When you specify a B-L furnace enclosure you can be sure of long life and lowest possible maintenance. Intelligent engineering and top-quality materials provide the stand-up stamina that makes enclosures "tougher than blazes." Each unit is individually designed for the job. Write today for complete information.

Castable Linings

B-L's castable lining for oil refining furnaces provides a smooth monolithic wall capable of resisting abrasion and standing up under high heat demands. The construction is adaptable to catalytic regenerators, catalytic reactors, cyclones, stacks and other refinery equipment.

BIGELOW-LIPTAK *Corporation*

UNIT-SUSPENDED WALLS AND ARCHES

BIGELOW-LIPTAK *Corporation*

AND BIGELOW-LIPTAK EXPORT CORPORATION

2550 WEST GRAND BOULEVARD, DETROIT 8, MICHIGAN

UNIT-SUSPENDED WALLS AND ARCHES

In Canada: BIGELOW-LIPTAK OF CANADA, LTD., *Toronto, Ontario*

ATLANTA • BOSTON • BUFFALO • CHICAGO • CINCINNATI • CLEVELAND • DENVER • HOUSTON • KANSAS CITY, MO. • LOS ANGELES • MINNEAPOLIS • NEW YORK
PITTSBURGH • PORTLAND, ORE. • ST. LOUIS • ST. PAUL • SALT LAKE CITY • SAN FRANCISCO • SAULT STE. MARIE, MICH. • SEATTLE • TULSA • VANCOUVER, B.C.

Hydraulic press where door panels are formed. Left-hand die punches and forms; center die second-forms and trims excess metal, right-hand die final forms.

Punching and counter-sinking holes for handle and fastenings.

Strikingly beautiful **color-chrome gas range** by Magic Chef, Inc., St. Louis, Mo.

How Stainless Steel helps Magic Chef bring glamour into the kitchen

MAGIC CHEF'S new *color-chrome gas range* is an eye-catcher anywhere you see it—in the kitchen or on the sales floor. Highlighting the beautiful decorator colors of the porcelain enamel top and sides is a front of gleaming Stainless Steel.

There's real beauty here, but that's not the whole story. There's the durability of long-lasting Stainless Steel. And there's the ease with which Stainless Steel's smooth, dense surface can be cleaned—year after year.

This is the kind of sales appeal that Stainless lends to an almost countless list of products. And you can have it with surprising ease of fabrication (See "Fabricating Facts"). Put this appeal in your products, and when you do, follow the lead of successful fabricators who use service-tested USS Stainless Steel in the products they make.

FABRICATING FACTS

Compartment door, oven door and broiler drawer panels are fabricated from USS 18-8 Stainless Steel sheets, No. 3 finish.

Sheets are dry-coated with drawing compound, then sheared to blank size. Forming takes place in an hydraulic press, using three dies. Stainless Steel sheets form easily and without distortion in a die setup designed for carbon steel sheets.

Panels are paper-wrapped to protect against scratching; holes for fasteners are punched and counter-sunk. Dry-coating is removed; panels are sub-assembled and sent to the production line for final assembly.

See The United States Steel Hour. It's a full-hour TV program presented every other week by United States Steel. Consult your local newspaper for time and station.

UNITED STATES STEEL CORPORATION, PITTSBURGH • AMERICAN STEEL & WIRE DIVISION, CLEVELAND
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO • NATIONAL TUBE DIVISION, PITTSBURGH
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USS

USS STAINLESS STEEL

SHEETS • STRIP • PLATES • BARS • BILLETS • PIPE • TUBES • WIRE • SPECIAL SECTIONS

S-99

UNITED STATES STEEL

THE "PLUS FACTOR" FOR EFFICIENT ELECTRICAL INSTALLATIONS
1 HOT GALVANIZED:
2 ELECTRO GALVANIZED:
3 BLACK ENAMELED:
4 ELECTRICAL METALLIC TUBING:
4 WAYS
TO GREATER EFFICIENCY & LOWER INSTALLATION COSTS
YOUNGSTOWN BUCKEYE CONDUIT

Write for this new folder about first aid for wiring protection

Youngstown

BUCKEYE CONDUIT

QUALITY YOUNGSTOWN SERVICE

●Youngstown Buckeye Conduit is full-weight rigid steel and is manufactured as Hot Galvanized, Electro-Galvanized and Black Enameled. It is available for immediate delivery in sizes from half inch up to six inches. We can also furnish Electrical Metallic Tubing in sizes from half inch up to two inches.

"4 Ways to Greater Efficiency, Lower Installation Costs" is a new folder giving a full description of each type, with complete information as to wall thicknesses, fittings, etc. Copies are available at no charge to guide you and your customers in the selection of steel conduit. Write for as many as you can use.

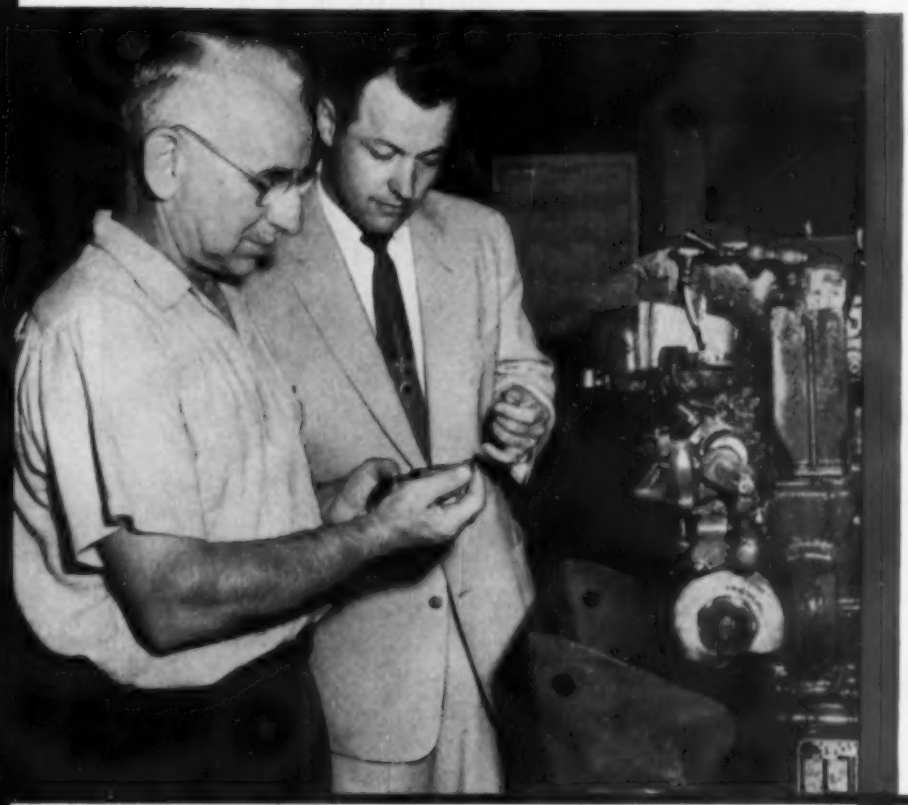
Rigid steel conduit is the SAFE raceway approved by the National Electrical Code for all hazardous locations. To be ENTIRELY SAFE use the best, use Youngstown Buckeye Conduit, your first aid for wiring protection.

THE YOUNGSTOWN SHEET AND TUBE COMPANY Manufacturers of Carbon, Alloy and Yoloy Steel

General Offices: Youngstown, Ohio - District Sales Offices in Principal Cities

SHEETS - STRIP - PLATES - STANDARD PIPE - LINE PIPE - OIL COUNTRY TUBULAR GOODS - CONDUIT AND EMT - MECHANICAL TUBING - COLD FINISHED BARS - HOT ROLLED BARS - BAR SHAPES - WIRE - HOT ROLLED RODS - COKE TIN PLATE - ELECTROLYTIC TIN PLATE - RAILROAD TRACK SPIKES

The story of 5 benefits Wayne Screw Products gets from using STANICUT CUTTING OIL



Plant Foreman Al Ziegman (left) and Standard industrial lubrication specialist L. J. Loomis examine pitch diameter of screw threads. L. J. Loomis' engineering background plus his field experience in industrial lubrication, customers find, pays off *for them*. Lee is a graduate of Tri-State college of Indiana with a B.S. degree. Before entering field work, he completed Standard Sales Engineering School.

STANICUT 137 BC Oil solved finish problem for Wayne Screw Products Company, gave better finish on screw and machined parts like these—plus four other important benefits.

Management at Wayne Screw Products Company, Detroit, found they were not getting a completely satisfactory finish on aircraft quality stainless steel, which the plant was machining. They followed a suggestion made by their Standard Oil lubrication specialist to switch to STANICUT 137 BC Oil. The result: five benefits. (1) Better finish (2) Higher quality work (3) Longer tool life (4) Higher production because of less down time for tool sharpening and adjusting (5) Cutting oil costs reduced approximately 50%.

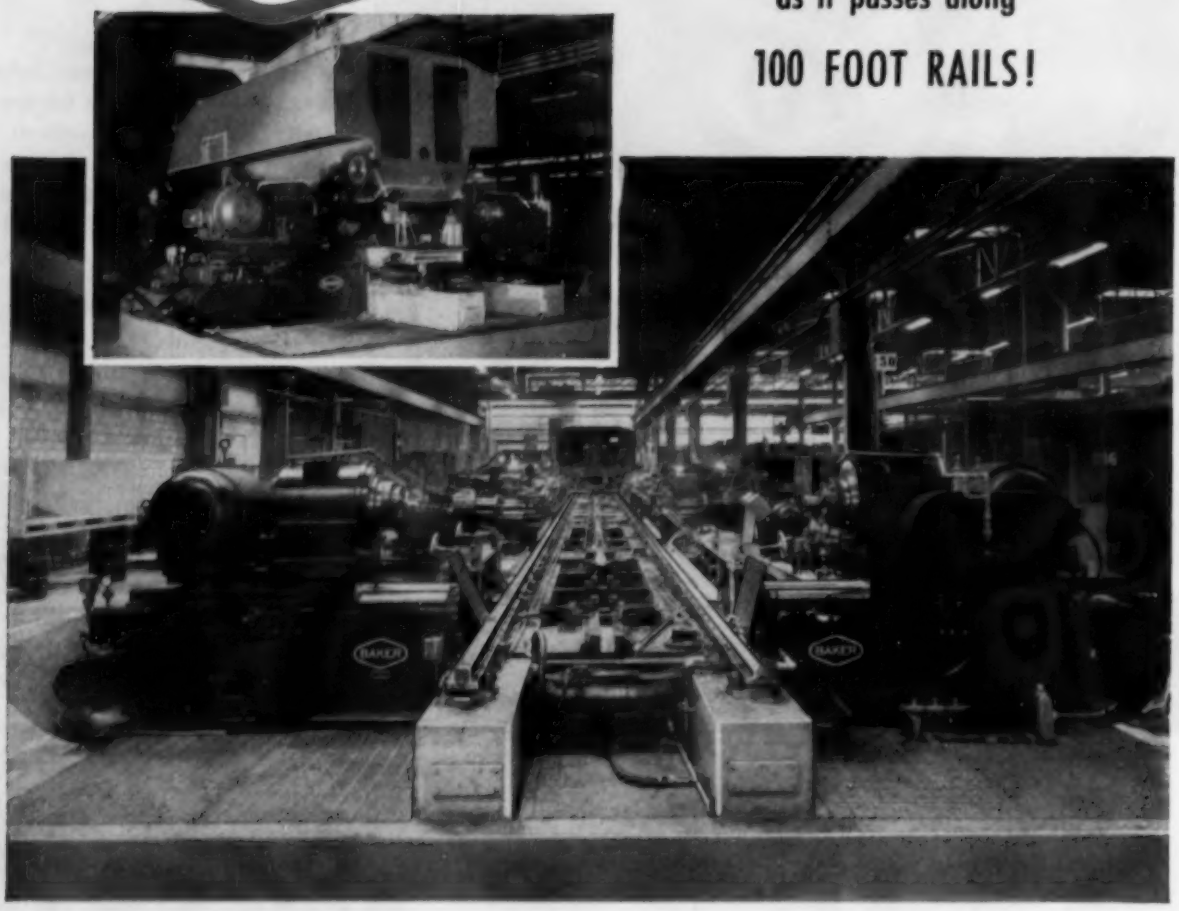
At first STANICUT 137 BC Oil was used in two automatic screw machines—a National Acme Multi-Spindle and a Brown & Sharp Single Spindle. Production benefits prompted Wayne Screw Products to convert other equipment to STANICUT 137 BC Oil—and with similar results.

Delivering benefits like this is an old story for STANICUT 137 BC Oil. A Standard Oil lubrication specialist will be happy to demonstrate how Standard's cutting oils can perform with similar results for you. In the midwest, a call to your nearby Standard Oil office will bring a prompt response. Or contact: Standard Oil Company, 910 South Michigan Avenue, Chicago 80, Illinois.

STANDARD

STANDARD OIL COMPANY
(Indiana)

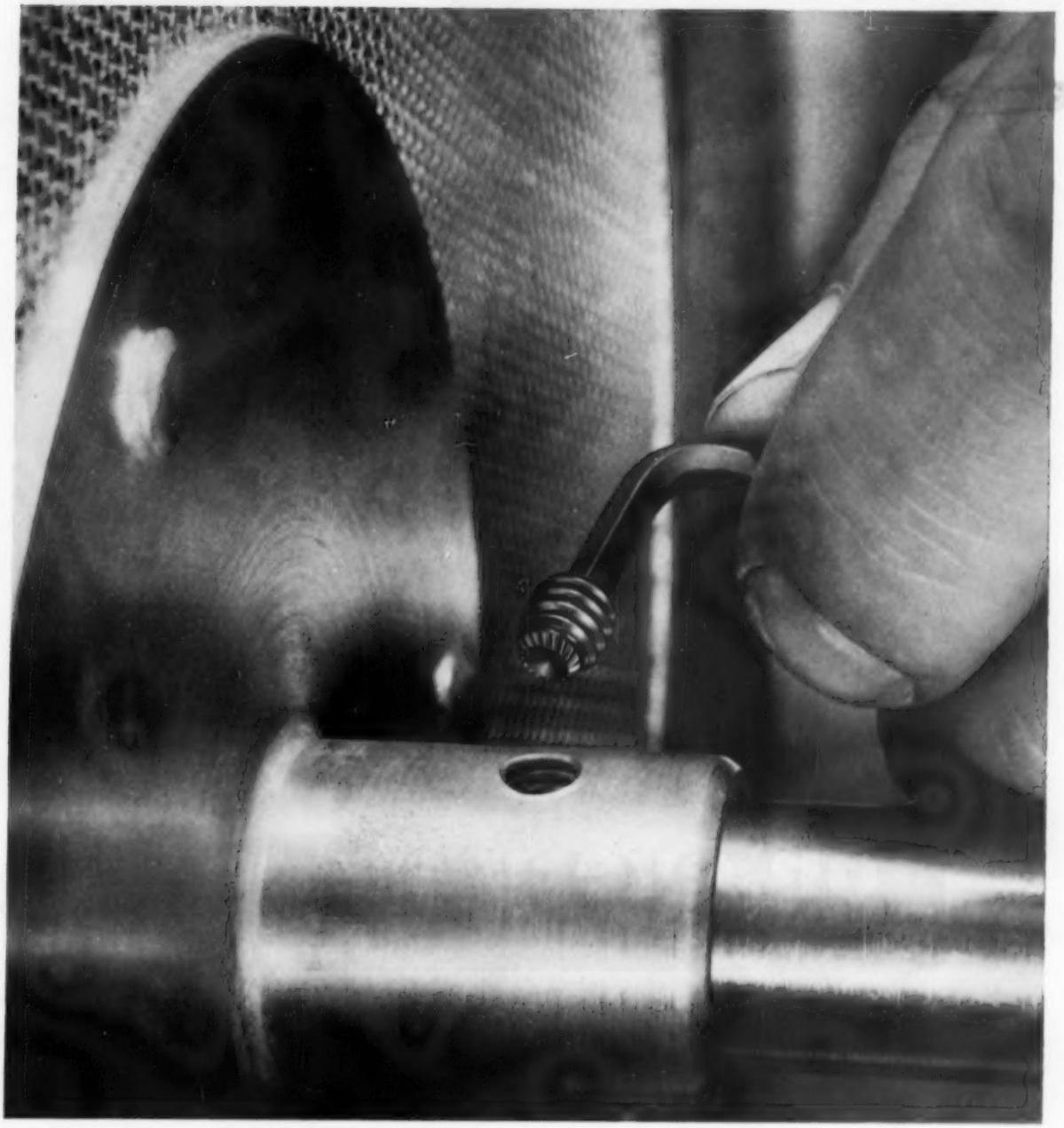
New BAKER Automatic MACHINES 15,000 lb. TANK HULL as it passes along 100 FOOT RAILS!

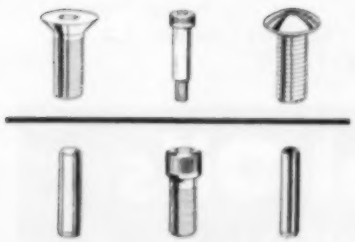


OPERATIONS: DRILLING . . . TAPPING . . . BORING . . . FACING on 102 holes . . . plus 10 main bores. Mounted on a specially-built floating concrete slab, this huge new Automatic Baker Transfer Machine accurately performs multiple drilling, tapping, boring and facing operations on 15,000 pound rough weldments 9 feet wide and 16 feet long. Savings achieved in production costs with a machine of this type are tremendous. Baker engineering know-how stands ready to solve your production problems . . . with cost cutting standard or special, single or multi-operation machines.

Write regarding your specific job problems . . .

BAKER BROTHERS, INC. Toledo, Ohio
DRILLING . . . TAPPING . . . KEYSEATING and CONTOUR GRINDING MACHINES





HOW TO KEEP A SET SCREW TIGHT. Tighten it as tight as possible. Keep it in place by preventing it from starting to work loose. With UNBRAKO Self-Locking Socket Set Screws you can do both. They are designed for the highest recommended tightening torques in the industry—as much as 45% higher than those used for ordinary socket set screws. UNBRAKOS have the unique knurled cup point which prevents them from starting to work loose, even in poorly tapped holes. For the complete UNBRAKO story, see your industrial distributor—or write STANDARD PRESSED STEEL CO., Jenkintown 33, Pa.

UNBRAKO® SOCKET SCREW DIVISION SPS JENKINTOWN, PENNSYLVANIA

There's an "invisible watchman" on every stand

WHEN you have *Texaco Regal Oil* in the circulating system, you have a never-failing "watchman" on every oil film bearing... constant assurance of dependable performance and low maintenance costs.

Texaco Regal Oil is heavy, turbine-grade oil especially made for this service. You'll like the way it resists oxidation, sludging and emulsification – its ability to separate quickly from water. You'll find it keeps bearings clean and lines clear for uninterrupted flow of protective lubricant.

In enclosed reduction gears, use *Texaco Meropa Lubricant*—noted for its high and constant "EP" properties. It resists oxidation, thickening and foaming, assures smoother operation, longer gear life.

Let a Texaco Lubrication Engineer help you get top performance from all your equipment and keep your maintenance costs at a minimum. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

TEXACO

TEXACO Regal Oils

(HEAVY CIRCULATING OILS)

TUNE IN: TEXACO STAR THEATER starring JIMMY DURANTE or DONALD O'CONNOR, on TV Sat. nights. METROPOLITAN OPERA radio broadcasts Sat. afternoons.

STEEL
February 21, 1955

Metalworking Outlook

145 Million Ingot Tons by 1970?

Bethlehem Steel Co. expects a gross national product of about $425 billion a year from 1958 through 1962 and an annual average of about $575 billion around 1970. GNP hit $357 billion in 1954 and may reach $365 billion this year. Bethlehem's president, A. B. Homer, says: "If those projections are realized, steel production should average about 118 million tons for the 1958-1962 period and approximately 145 million tons 15 years from now." That would compare with an average of 92.4 million from 1948 through 1952.

Tool, Die Business To Hold

Look for industry to spend about $750 million for special tools and dies in 1955. J. H. Stanek, president of the National Tool & Die Manufacturers Association, believes that the expenditures will be about the same as last year, the second largest year the tool and die industry ever had. Customers are ordering bigger, more complicated tooling.

Opportunity in Chemicals

Seeking new fields to conquer? Don't overlook equipment needs for the chemical, rubber and allied products industry. Its capital outlays will approach $1.2 billion in 1955, only slightly below 1954 expenditures. Rubber companies alone will spend $120 million, 5 per cent below the 1954 total. Sales by the industry this year should top the 1954 peak by some 4 per cent, reaching an all-time high of $21 billion.

Defense Spending Steady

Don't expect increased defense expenditures unless the Formosan problem gets much worse. Defense will cost about $40.5 billion in fiscal 1956. If there are any changes in security spending for the 12 months beginning next July 1, they are most likely to come in details of the outlays, with the total remaining about the same. As the planning now stands, nearly $16 billion of the $40.5 billion will be for major military procurement, $1.7 billion for military public works and nearly $600 million for reserve components.

Capital Changes Set Record

Capital changes by corporations set a record during the favorable securities market of 1954. Commerce Clearing House reports that more than 1800 corporations altered their financial structures. More than 1500 made changes in 1953, 1300 in 1952, 1500 in 1951 and 1000 in 1950. Judging from the way 1955 is starting out, look for another record this year. Stock splits are the most common changes thus far. The latest major company to take the step is Republic Steel Corp. Stockholders will vote on a 2-for-1 proposal May 11.

Corporate Amnesia: Cause, Cure

How's your industrial defense? In case of bombing would your company suffer "corporate amnesia" because of the loss of vital records? Do your

Technical Outlook—p. 73 Market Outlook—p. 113

present bylaws enable surviving directors and officers to take official action? Has provision been made for the succession of key executive, technical and administrative personnel? Should your company consider an alternate headquarters? Those are only a few of the industrial defense questions that confront management. To begin to get answers, a logical starting point is a conference or meeting with the Business & Defense Services Administration. Its address: Washington 26, D. C.

General Electric: Modern Alchemist

If the present high cost of making diamonds by the new General Electric Co. processes can be reduced, the primary application of man-made diamonds will probably be in industrial tools for cutting and polishing. GE says that the tiny diamonds—the largest measures 1/16-in. in length—were made from a carbonaceous material subjected to extreme pressures and temperatures. Dr. C. Guy Suits, GE vice president and director of research, says: "Any conclusion we are about to make diamonds of a size and quality suitable for gem use is decidedly premature."

Channel 8 for Labor Parley

Would you gain or lose if all your workers and their families could sit in on your contract negotiations with the union? The "sitting in" could be via closed-circuit television as was demonstrated in Chicago last week. American Management Association members sat in on unrehearsed talks between Rogers Corp., Rogers, Conn., and the International Brotherhood of Paper Makers. The talks were conducted in a Palmer House room and piped to AMA members in the ballroom. Predicted Saul Silverstein, Rogers' president: "This may foreshadow the day when labor-management negotiations will be carried on so that workers, their wives and children will know what's going on all the time."

Straws in the Wind

Housing starts totaled 87,809 in January, a new high for the month but below December's 89,600 . . . President Eisenhower's request for extension of the 52 per cent corporate income tax rate will be acted on by the House Ways & Means Committee this week without public hearings . . . An Interstate Commerce Commission examiner judged as fair the piggyback rates charged by six railroads among several eastern and midwestern cities . . . Want a bike for only $595? A Dutch-built five-seater is on the market at that price.

This Week in Metalworking

What the proposed AFL-CIO merger would mean to industry (p. 41) . . . If the minimum wage is boosted from the present 75 cents to 90, some 1.3 million workers would be affected (p. 43) . . . Makers of open steel flooring and floor plate hope to walk off with 5-15 per cent more business this year than last (p. 44) . . . There's more stretch in sales of industrial springs (p. 45) . . . Management has a chance to put its best foot forward at annual meetings (p. 46).

These Westinghouse Fans Help You Increase Production . . . Employee Efficiency

Whatever your air handling problem . . . smoke, fumes, vapor, dust, wood shavings, granular material or ventilating . . . these Westinghouse fans are designed to handle or remove them . . . efficiently and economically.

INDUSTRIAL FANS (SERIES 700) . . . for dust collecting and conveying at high pressure. Wide range of capacities. Three types of wheels in 11 sizes.

1. Air Handling Wheel . . . particularly adaptable for general air handling and exhaust systems in removal of smoke, fumes and gases.

2. Material Handling Wheel . . . designed specifically for grinding and buffing wheel systems, and conveying materials such as chips, sawdust and grains.

3. Long Shaving Wheel . . . handles long fibrous materials that pass through the fan itself: trimmings from corrugated boxes, alfalfa, long shavings from woodworking machinery, rags, others.

INDUSTRIAL FANS (SERIES 500—MONOGRAM) . . . ruggedly built, with cast iron casing. For use as a blower or exhaust or for dust control, collecting and conveying waste or raw materials, supplying air for furnace blast, drying, etc. Provides long, trouble-free service at low cost under severest operating conditions. In 10 sizes with wide range of capacity.

SERIES 900 VENTILATING SETS . . . compact, efficient, direct-connected and ready-to-run. Especially suited for small ventilating installations. Cleanable radial blade wheel design minimizes problem of handling airborne dirt and grease. Six sizes from 6" to 15" wheel diameters.

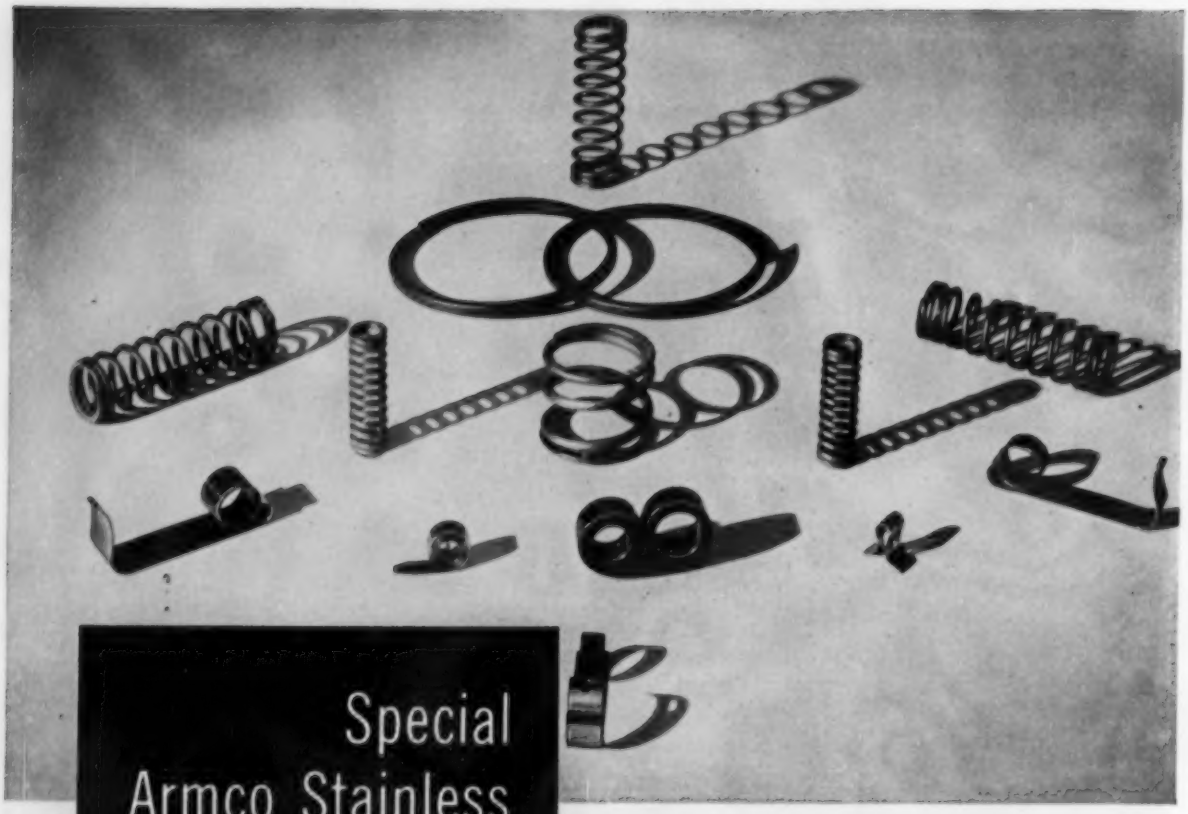
SERIES 1000 VENTILATING SETS . . . V-belt driven, self-contained. Install indoors or outdoors in a wide variety of heating, ventilating or air conditioning applications. Twelve sizes from 9" to 30" wheel diameters.

These rugged, powerful Westinghouse fans provide the most economical solution to your specific air handling problem. And Westinghouse fans offer a *single equipment warranty* with undivided responsibility . . . an *exclusive* Westinghouse-Sturtevant feature. Get the facts today on the fan built for *your* need from your nearest Westinghouse-Sturtevant office. Or write: Westinghouse Electric Corporation, Sturtevant Division, Hyde Park, Boston 36, Mass.

WESTINGHOUSE AIR HANDLING

J-80160

YOU CAN BE SURE...IF IT'S Westinghouse



Special Armco Stainless Spring Wire

HAS STRENGTH OF MUSIC WIRE

A special Armco Stainless Steel, known as 17-7 PH, has proved far superior to 18-8 as a spring material. It is also better than non-ferrous spring wire in applications where higher strength is needed. Here are some of the characteristics of this grade of stainless steel.

High Load Capacity

Mechanical properties and modulus of elasticity of Armco 17-7 PH Stainless Steel wire are generally comparable to music wire. This means that the same spring capacity can be obtained in a corrosion and heat resistant spring as in a carbon steel spring, without increase in size.

High Elastic Limit

Armco 17-7 PH springs have a wide deflection range in which they are safe from permanent distortion. This is because of the high torsional elastic limit of the wire — 55 per cent of the ultimate tensile strength.

Better at Elevated Temperatures

Relaxation of helical compression springs of Armco 17-7 PH at temperatures up to 650 degrees F is considerably less than for 18-8 or music wire.

Torsional modulus of 11,000,000 psi is less affected at temperatures up to 650 degrees F than 18-8 or music wire.

Dimensional Stability

After fabrication, only a single heat treatment at 900 degrees F is required to develop full mechanical properties and this treatment stress-relieves as well. Spring dimensions are not affected by this hardening treatment because of the high dimensional stability of Armco 17-7 PH.

Armco 17-7 PH is supplied for coil or flat springs, in bars, sheets, strip and plates. A companion precipitation-hardening grade, Armco 17-4 PH, is supplied in bars.

For further information, write us at the address below.

ARMCO STEEL CORPORATION

865 Curtis Street, Middletown, Ohio

Sheffield Steel Division • Armco Drainage & Metal Products, Inc. • The Armco International Corporation

Labor's Responsibilities

By 1956, the American Federation of Labor and the Congress of Industrial Organizations are scheduled to be united.

The peacemaking marks the end of a long rift. Twenty years ago John L. Lewis and his United Mine Workers pulled out of the AFL to form the CIO with Sidney Hillman of the Amalgamated Clothing Workers.

To workers in the heyday of the New Deal, the lusty young union had special appeal. It recruited members in the steel, auto, rubber and other mass production industries as groups rather than by the specialized crafts of AFL.

Today, AFL has 9 million members, CIO 6 million. Under Presidents George Meany of AFL and Walter Reuther of CIO, the bitter rivalries of their predecessors have been conveniently forgotten.

Last June, 94 member unions signed no-raiding pacts. By October, merger plans were well along. Approved at the top, the agreement now lacks only formal acquiescence of members. Mr. Lewis in his declining years finds himself alone with a miners' union that is waning in power and influence.

The new federation will have the combined financial assets of AFL-CIO and an annual income of over $7 million. It will control or influence at least one-third of the nation's voters. It could become a strong new political party or infiltrate an old one. It could be a monopoly threatening business and industry.

Before the merger, AFL went on record for a 35-hour week by 1956 and for 30 hours, later. Michael Quill of the CIO Transport Workers wants the shorter week now. Next month, Walter Reuther will seek a guaranteed annual wage for autoworkers. The federation will drive for more members, including white-collar workers. Ever-present is the pressure for higher wages.

As the strong arm of labor, AFL-CIO leadership is in a position to do these things:

Wipe out the undermining influence of communism.

Persuade members to perform an honest day's work.

Eliminate costly work stoppages.

Play politics unselfishly on behalf of good government.

Understand the problems of management in running a business.

If it will assume these responsibilities, it automatically will achieve its goal of higher standards of living and well-being for all.

Irwin H. Such

EDITOR

(Advertisement)

What's New

IN STEEL FROM STOCK

In the news today are many developments of interest to those who specify, buy or work with steel. Ways in which you can raise efficiency and lower costs in your operations may be suggested by the following summary.

7½¢ per lb. saving on stainless sheets. Rising nickel prices are bringing back Type 430 straight-chrome stainless for mild corrosion applications. 7¼c price advantage is real inducement and Type 430 may also be getting consideration as insurance against any shortage of nickel-bearing types. Ryerson has anticipated renewed demand by stocking Type 430 sheets in many gauges and sizes. Technical data on request.

Low carbon plates for easy forming and welding. If you've had trouble forming or welding carbon steel plates remember—steel produced to most popular warehouse plate spec. (ASTM A7) may have up to .35% carbon. To meet this problem, Ryerson now carries plates (⅜" and lighter) produced to low carbon spec. especially for good forming and welding qualities. Also on hand: more sizes—more tonnage of carbon steel bars, shapes and sheets.

Revolutionary reduction in shop costs brought about by Ryerson's New Rycut 50 is the most important news to hit the alloy steel market in years. With this new .50 carbon leaded alloy, reductions in finished part costs of 25% or more are commonplace. Machining time is often reduced as much as 75% . . . tool life extended from 100% to 300% and production increased as much as 200%—all without known loss in mechanical properties as compared with standard alloys in the same carbon range.

A leaded alloy for every application is now available in the Ryerson Rycut series. Any one of them will typically cut your costs on machined parts by 25% or more. Use Rycut 20 when you need a carburizing alloy. Use Rycut 40 when you need a .40 carbon alloy, and New Rycut 50 for .50 carbon alloy applications. Also on hand in a growing range of sizes: leaded carbon-manganese bars—low carbon, suitable for case hardening, unusually fast machining.

New Ryerson stainless solves welding problems. Both stainless sheets and stainless plates in Type 304 L and Type 316 L have recently been added to the nation's largest stainless stocks—at Ryerson. In applications involving welding and stress relieving, where carbide precipitation may occur, these extra-low-carbon stainless steels can often replace expensive stabilized types.

Save 30% with Type 302 ornamental stainless tubing. Another recent addition to Ryerson stocks, this tubing is priced substantially below comparable stainless tubing for other than ornamental purposes. Yet it is more than satisfactory for many applications such as in restaurant and hospital equipment, etc.

Same day deliveries . . . tighter quality control. On as high as 98% of all regular warehouse orders, Ryerson is now cutting and shipping steel the same or following day. And this steel is now protected by a whole new set of quality control standards. As evidence—we can furnish a certificate of analysis or a mechanical properties report for every pound of steel shipped.

RYERSON CERTIFIED STEELS

JOSEPH T. RYERSON & SON, INC. PLANTS: NEW YORK • BOSTON • PHILADELPHIA • CLEVELAND
CHARLOTTE • CINCINNATI • DETROIT • PITTSBURGH • BUFFALO • CHICAGO
MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO • SPOKANE • SEATTLE

George Meany's political savvy may make the "big union"

The New Union Look:

George Meany (AFL) president
W. F. Schnitzler (AFL) secretary-treasurer
Seventeen vice-presidents from the AFL
Ten vice-presidents from the CIO

Organization:

A Council of Industrial Organizations, composed of all the industrial unions and headed by Walter Reuther, will be added to such existing AFL departments as Building Trades and Metal Trades

Backing:

The federation will collect $7,200,000 annually by a 4 cent monthly per capita cut of the union dues from its 15 million members. It will also get about $5,300,000 in cash, bonds and real estate from current CIO-AFL assets

Constitution:

The new federation will be set up to protect integrity of its member units. Constitution will call for members to refrain from pirating each other's membership. Machinery will be provided to handle jurisdictional disputes by voluntary agreement between contending unions

What AFL-CIO Merger Means

IF THE CIO-AFL merger goes through, the long-term outlook for industry is not too bright. For the short-term, management-labor relations will be about the same whether or not the two unions consolidate.

Industrial relations and other authorities checked by STEEL feel that there'll be no major departures from set patterns at least until the new "big union" has had time to get internal differences ironed out. Although some believe that traditional cleavages are still too great for the merger to come off, most are betting on the political savvy of George Meany and Walter Reuther to cement the deal at next fall's union meetings.

Diplomats—Testifying to the ingenuity of Mr. Meany and Mr. Reuther, Dave Beck of the Teamsters is joining them, although preliminary merger terms (see above) maintain the "no-raiding" principle which has been Mr. Beck's major objection right along. Observers look for the final constitution (to be drafted after the Feb. 24 CIO meeting) to be loose enough to give elbow room to all concerned.

If ratified, concerted action will be a long time coming. But union leaders are sure to get a psychological boost from their new status. Bargaining will get tougher, with individual unions developing bad cases of the "gimme's" around contract time. The push will be on for higher wages and more fringes, while big companies will be under more and more pressure to eliminate geographical wage differences and differences between wages of men and women doing the same work.

Demands—Unions will continue to push for more information on the ins-and-outs of the employer's business, such as wage rates and costs. Strong demands for the union shop are likely to be exerted.

With autoworkers in the vanguard, the guaranteed annual wage will rise higher and higher on the list of demands. Many observers feel that some minimal GAW, perhaps the 30-week year, may well be set by auto contracts this spring. With this sort of precedent, there's a distinct possibility the GAW will eventually boomerang on many other unionized industries.

Talking Points—Automation will be much talked about. Right now, Mr. Reuther is predicting that from 2.5 million to 3.5 million new jobs will be needed each year to take

up the slack in employment caused by technological advances in industry. "Unless this is done," he asserts, "the nation is in trouble."

Mr. Reuther's thinking is likely to get short shrift from industry. Benjamin F. Fairless, chairman of United States Steel Corp., denounces as false the claim that automation will bring mass unemployment, declaring: "The time has come to nail this vicious propaganda for the miserable fraud it is." So, in addition to demands for the GAW, there will be increased union drives for shorter work weeks, productivity increases and job reclassification.

Teeth—Other areas for increased industrial activity: A big drive on the South, where labor unions are still poorly represented. The platform: Boost southern wages to northern levels. There'll be more attention paid to unionizing more people in different jobs. White-collar workers will be wooed; engineers, scientists and similar professionals will be in for strong pitches.

Politics—One of the first aftermaths of unity will be the consolidation of the CIO's Political Action Committee and the AFL's Labor League for Political Education into a single organization. It will speak with one voice for unions in the pooled federation. Mr. Reuther is the most likely nominee for its head.

Representing about 15 million union votes, the new organization could be a potent political force. Although there's some doubt whether it will have any better success in promoting its candidates than the separate unions previously enjoyed, a strong drive to elect a sympathetic administration in 1956 is a sure bet. Action will probably center on hot campaigning in districts where the vote is traditionally close, rather than a national shotgun approach.

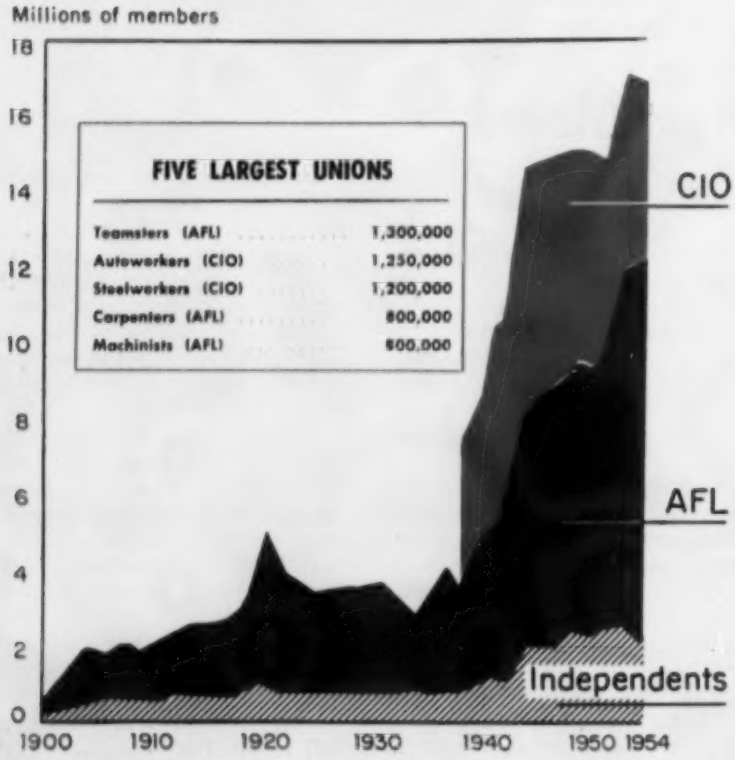
State and National — Political pressure will also be exerted on state "right-to-work" laws. The aim will be to repeal those existing and to prevent more from being enacted. Taft-Hartley will be on the firing line. Pressure here may win a few revisions, but repeal or even extensive modification isn't likely.

Mr. Reuther is also calling for boosts in personal income tax exemptions to $800 now and eventually to $1000. He wants minimum wage upped to $1.25 an hour and its coverage extended; the "inadequate unemployment compensation system" modernized; and the nation's housing goal hiked to 2 million new units a year with government backing. Other items on the agenda: Stepped-up farm spending, increased public works program, national health insurance.

The Future—There's a sharp break in opinions on what those 15 million votes may mean. One long-term cause for concern is that if the organization proves a real force in rallying the labor vote, it could eventually become the dominant voice in the Democratic party. Others view the situation as a blessing in disguise.

"Labor is coming of age," they remark. "Through the reduction of jurisdictional disputes and elimination of competing unions in the same field, the machinery of collective bargaining will be strengthened to the advantage of both management and labor."

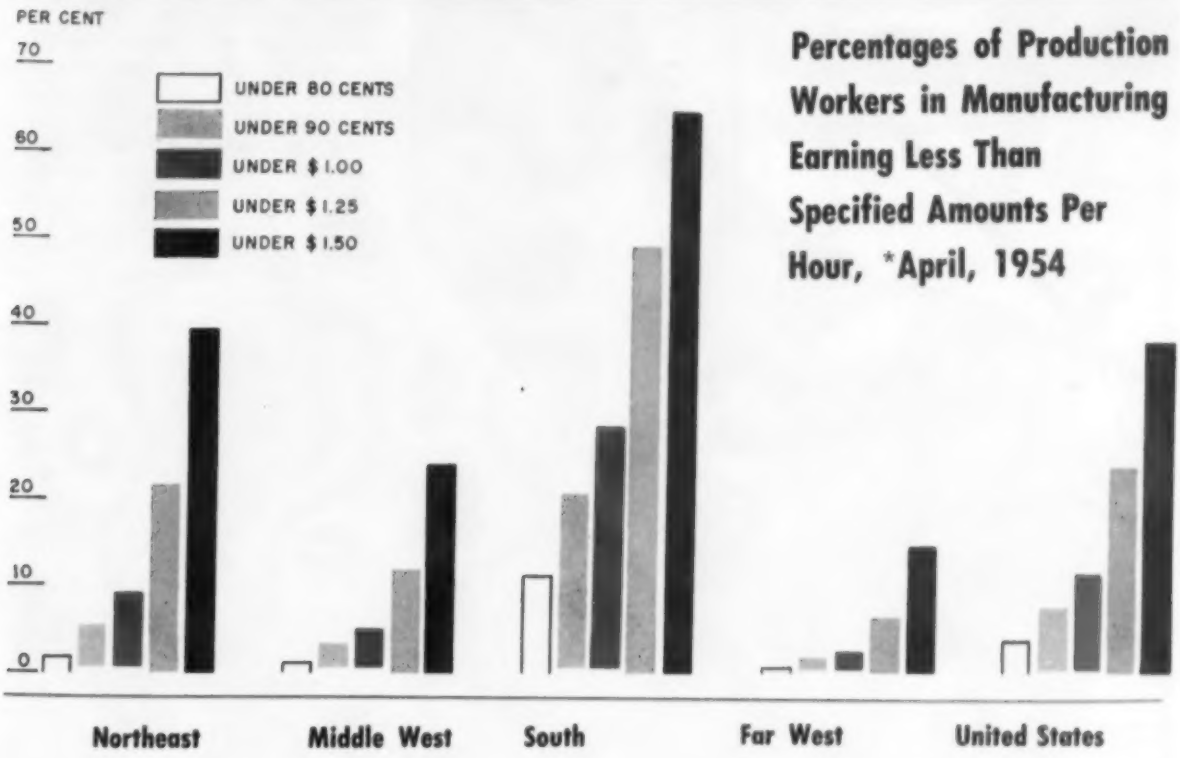
Labor Union Membership Since 1900



AFL Considers Fund Controls

Officials of the American Federation of Labor are considering recommendations that would have Congress require periodic disclosure of union welfare fund financial operations.

The AFL plan recommends that unions change their constitutions, if necessary, to take steps to: 1. Prohibit union officials from drawing extra pay beyond their union salaries for handling welfare funds. 2. Ban any unethical ties between union officials and insurance firms. 3. Require periodic audits which would be made public. These audits would include an accounting of commission and fee payments. 4. Stipulate that fund trustees be prosecuted for receiving improper payments in connection with their administrative work. 5. Prohibit investment of welfare fund reserves in any contributing employer's business or in banks and insurance companies handling the funds.



Percentages of Production Workers in Manufacturing Earning Less Than Specified Amounts Per Hour, *April, 1954

*Hourly earnings excluding premium pay for overtime and for work on weekends, holidays, and late shifts. Source: Bureau of Labor Statistics

Pay Raise for 1.3 Million

Increasing minimum wage from 75 to 90 cents would give increases to 20.2 per cent of southern factory workers. In other geographical areas only 2.3 to 4.1 per cent are involved

RAISING the minimum wage to 90 cents, as recommended by President Eisenhower, would give pay boosts to some 1.3 million workers. This group represents about 5 per cent of the 24 million workers subject to the Fair Labor Standards Act.

A Bureau of Labor Statistics survey of April, 1954, provides information on the number of factory workers in various wage intervals between 75 cents and $3 an hour.

Low Hourly Rate—Nationwide, an estimated 380,000 factory workers, or 3 per cent of the total, earned less than 80 cents an hour; 817,000, or 6.5 per cent, earned less than 90 cents; and 1,282,000, or 10.2 per cent, earned under $1.

At the lower end, the proportion of workers earning less than 90 cents per hour varied significantly among the four broad regions of the United States.

Regional Statistics—Percentage of individuals working for less than 90 cents in the four regions was: Northeast, 4.1 per cent; Midwest, 2.3 per cent; South, 20.2 per cent; and Far West, 2.3 per cent. An estimated 22.4 per cent (2,823,000) of the factory workers earned less than $1.25 an hour. Half the southern workers were earning less than $1.25 while in the Far West all but 6.3 per cent were making at least $1.25 an hour.

This spread in hourly wages is a reflection of many factors, including wide variations in required skills among factory jobs and differences in wage levels among industries and firms within the same industry.

Average—Production workers in manufacturing as a whole averaged $1.68 an hour, exclusive of premium pay. An average of $1.36 was recorded in the South, where about a fifth of the factory workers are employed. Averages for the Northeast and Midwest, which together account for 70 per cent of factory employment, were $1.67 and $1.80 an hour, respectively. The Far West, with less than a tenth of the manufacturing work force, had the highest average wage level, $1.94 an hour.

Rail Engineers Demand Raise

Rail engineers want a 22.5 per cent wage increase. This demand is being made by the Brotherhood of Locomotive Engineers on every major U. S. railroad and would embrace all categories of engineers.

The union is reopening a skilled differential campaign it began over a year ago. It asks for a wage increase and elimination of what it terms inequities between engineers' wages and rates paid firemen and other railroad employees.

Jones & Laughlin Steel Corp.

More support for American industry looms as . . .

Sales Step Up for Steel Flooring

WATCH for reviving industrial activity to raise floor plate sales 5 to 10 per cent in 1955. Producers of open steel flooring are more optimistic. Enjoying a wide field of applications, they look for sales this year to be about 15 per cent better than 1954's.

These two products, which literally support American industry, depend largely on the volume of industrial expansion or maintenance requirements. But heavily competitive conditions of the last two years prompted sales managers to uncover many new uses.

Definition—Floor plate is a highly specialized item, produced by a half-dozen steelmakers. With sales mainly to new industrial plants, best years were 1952 and 1953. Sales dropped sharply last year. Now, with industrial construction at low ebb, selling is slow and the field is highly competitive.

While large volume uses of floor plate are well accepted (freight elevator floors, sidewalk hatches, stairway treads, aisles in plants and catwalks), new uses emerge wherever sure footing is a must. An example is found in playground equipment.

What's Ahead—Here's the outlook for 1955 among users of floor plate: About half of all floor plate is sold through warehouses for small uses, such as maintenance of floors. Maintenance should equal or surpass 1954 levels. Railroad requirements, low in 1954, should be somewhat higher. Shipping, with heavy usage of floor plate in engine rooms, will remain inactive in buying. Truck manufacturers should continue to require large volumes for truck beds. Industrial construction will increase its use later this year. Oil refineries are stepping up their requirements.

Strong sales promotion helps sell industry on the value of metal floor. Inland Steel Co., Chicago, points out advantages of this versatile flooring material. Metal floors give traction for feet and wheels. Easy to keep clean, they won't burn or absorb liquids. Tough and rugged, they'll last for years.

Insurance Against Accidents—Accidents can be avoided with the installation of floor plate, points out U. S. Steel Corp., Pittsburgh. Look at floor space in loading platforms and aisles around heavy machinery. You could be heading for trouble if floors are slippery.

Open steel flooring producers share this outlook. "Sales are gaining, and to a wide variety of consumers," comments N. I. McKeel, Jr., sales manager, grating department, Blaw-Knox Co., Pittsburgh. Last year's production slipped from the outstanding levels of 1952 and 1953. With growing maintenance requirements and stronger sales to chemical and petroleum industries, predictions place this year's sales 10 to 20 per cent above 1954's.

Strip and Bar Product—Some 13 major producers make flooring or steel grating of open construction with riveted, welded or interlocked joints. Welding is the most popular method of manufacture. It's fabricated from hot-rolled steel strip and bars.

Like floor plate, open flooring sales depend largely on new construction. It's used in bridges and refineries, where the galvanized or painted steel resists corrosion. Airfields require more.

"Users range through all industries," comments Stuart J. Swensson, secretary, Open Steel Flooring Institute, Pittsburgh. "Major consumers include power and chemical plants, aluminum and steel mills, but potentialities are unlimited."

Curtiss-Wright Corp.

New applications, booming automotive demand will help . . .

Springs Bounce Back in '55

SALES OF MECHANICAL and precision springs will jump to $146 million in 1955. Estimated sales in 1954 were $135 million. Peak years for the spring industry, excluding producers of bedding and upholstery springs, were 1952 and 1953 when sales reached $160 million each year.

The optimistic forecast for 1955 is based on booming orders from the automotive industry and the increased applications in the appliance and electronics fields.

Profit Margins—Competition for the approximately 200 springmakers is keeping prices down to narrow profit margins. The major problem of the industry is to hold manufacturing costs at a level where occasional higher material or labor costs can be absorbed. The recent rise in the price of nonferrous materials may make it difficult to keep the price of springs at their present level.

In some cases, producers of heavier springs are using more alloys, but high carbon tonnage leads by a substantial margin. To meet competitive prices, some users normally using alloy steel for heavy duty springs are going to carbon. Replacement volume in the heavy duty spring category is slow, particularly in railroads. Heavy equipment builders are also reluctant to order heavily.

Better Processes—There is constant improvement in spring and manufacturing processes, both in coiling and forming equipment. Wire specialties are also receiving considerable attention. While the bread-and-butter end of the industry is in producing high carbon coiled wire springs made to consumer specifications, producers are increasingly interested in developing specialties. This applies to all types: torsion, compression, extension and helical.

For high temperature and corrosive applications, new wire specifications are being developed. Alloy Metal Wire Division, H. K. Porter Co. Inc., has produced a new stainless steel alloy which is 17 per cent nickel, 7 per cent chromium.

Improved Sales—More spring clutches are being used. Marquette Metal Products Co., Cleveland, is producing precisely machined spring clutch devices in numerous types and forms. A spring clutch is basically a helical spring designed to lock against a drum surface for transmission of torque or turning force.

For high quality precision mechanical springs, hard drawn music wire is being used in large quantities. Several manufacturers are using imported Swedish steel which is high carbon, has surface ground billets and is acid-etched to eliminate surface defects. Music wire is drawn at somewhat slower speeds than most wires and drafting is lighter.

Mechanical Progress—In springmaking equipment, new machines stress increased ease in setup for production runs. While the trend is toward faster coiling, there is also new equipment out to allow for low or high output rates. Torrington Mfg. Co., Torrington, Conn., has redesigned one model. It has a production range of 24 to 243 springs per minute using a motorized variable speed transmission or 21 to 240 per minute using an electronic adjustable speed drive.

Four shops in Connecticut account for the bulk of the coiling, winding and mechanical spring forming machines now being built. Connecticut was an early pioneer in precision spring production, but industry growth is now focused in the Midwest.

With new processes and new applications, springmakers see business stretching higher in 1955.

Annual Meetings Sell Management

One of the best ways to sell management policies and inform stockholder-owners on how capitalism works is a give-and-take annual meeting. Here are some do's and don'ts

METALWORKING FIRMS are finding it's easy and comparatively inexpensive to keep their stockholders sympathetic and informed through the annual stockholders' meeting. Most of them come up in March and April.

And they're becoming more important each year as more private citizens become small shareholders.

The Trend — Brookings Institution made a study in 1952 which showed there were 6.5 million stockholders in the U. S., or one out of every 16 adults. One-third of the shareholders had annual incomes of less than $5000 and three-fourths made less than $10,000 yearly.

Where industry previously could keep in touch with the majority of its stockholder-owners by contacting a few stockbrokers and professionals, industry now must feel out a mass of individuals from every stratum of society. Annual meetings are being used to sound out stockholder thinking, inform private shareholders of the policies of management and educate them on how their company fits into the bigger business picture.

Pave the Way—The annual meeting can be the broadest avenue to good stockholder relations. But to do an effective job of informing and educating requires planning.

STEEL interviewed treasurers, secretaries and similar people who do that planning. They say: Don't make a big announcement of your meeting and then do a stereotyped job. It could result in disappointed stockholders.

Typical of well-planned annual meetings are Standard Oil of Ohio's affairs. From 500 to 600 persons attend; all of top management is there

Make It Easy—Use language understandable to the layman in everything you present. The professional stockbroker will wade through legalistic language to get what he wants; the private investor cannot. Make your presentations as graphic as possible. Graphs and charts make complicated statistics easily understandable.

Make room in your program for questions from the floor. Another word of caution: Don't be surprised at the ignorance of your stockholders. What may be perfectly obvious to you because you work with the business everyday may be puzzling to the uninitiated. Listen to these questions carefully. They may point to potential trouble spots.

Try to look ahead to future business as well as at the year gone by. Take your stockholders into your confidence as much as is consistent with good business conduct. The usual reason for not giving information at these meetings is that "competition may find out." Actually, competition can find out so much about your business by other means that your stockholders wind up being the only ones left in the dark.

Final Word—Don't hold a good meeting and then stop there. Prepare a digest of what was said and send it to all stockholders in a postmeeting report.

Remember, you have as much to gain as to give in meeting your stockholders face to face. It pays not to wait until you've got a fight for stockholder support on your hands to find out what they really think about your management.

Screw Machine Products Up

December, 1954, marked an 18-month high for orders of screw machine products, says Orrin B. Werntz, executive secretary of the National Screw Machine Products Association, Cleveland.

Mr. Werntz is predicting that the outlook for the first quarter appears to be as good or somewhat better than in 1954. This is based on the NSMPA industry business index which has shown a steady rise for the last five months. There also has been an increase of 10 per cent on repeat job quotations within the last 60 days.

Metalworking Machines: Shipments, New Orders, cancellations, and unfilled orders, 1953 and 1954

(value in thousands of dollars)

Item	Total		1954			
	1953	1954	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
METALWORKING MACHINES, TOTAL						
Shipments	$1,386,198	$1,072,799	$328,383	$303,508	$232,020	$208,888
New orders	1,086,835	688,034	181,495	166,799	164,280	175,460
Cancellations	142,898	50,661	20,937	12,823	9,526	7,375
Unfilled orders, as of end of year (quarter)	850,726	415,300	682,901	533,369	456,103	415,300
CUTTING TYPES						
Shipments	1,138,141	821,450	260,942	232,208	172,946	155,354
New orders	834,906	523,188	134,473	128,932	130,491	129,292
Cancellations	109,455	41,668	16,634	10,685	8,239	6,110
Unfilled orders, as of end of year (quarter)	598,491	258,561	455,388	341,427	290,733	258,561
FORMING AND SHAPING TYPES						
Shipments	248,057	251,349	67,441	71,300	59,074	53,534
New orders	251,929	164,846	47,022	37,867	33,789	46,168
Cancellations	33,443	8,993	4,303	2,138	1,287	1,265
Unfilled orders, as of end of year (quarter)	252,235	156,739	227,513	191,942	165,370	156,739

Source: Department of Commerce

'54 Machine Shipments Off 23%

A Commerce department annual survey on metalworking machinery also shows that U. S. industry imported 39 per cent fewer foreign units

METALWORKING equipment shipments during 1954 were $1,072,799,000, compared with $1,386,198,000 for 1953, according to the Department of Commerce's Census Bureau and Business & Defense Services Administration.

The 1954 estimated shipments included $821,450,000 of cutting type machines (see chart) and $251,349,000 of forming and shaping types, compared with $1,138,141,000 and $248,057,000, respectively, for 1953.

Main Types — Lathes, drilling, and boring machines were the main types of cutting machines shipped. Mechanical, hydraulic and pneumatic presses accounted for the major portion of forming and shaping shipments.

Going Out—From Jan. 1 to Sept. 30, 1954, cutting tool exports were $57,933,000, a 37 per cent decline from the $92,087,000 level for the same period in 1953. Canada was the principal export market, with purchases of cutting type machines running $16,037,000 — 28 per cent of the total exports. France and the United Kingdom ranked next, with purchases of $8,036,000 and $6,664,000, respectively.

Coming In—It is estimated that imports of metalworking machines of the cutting and forming types were $22,666,000 in 1954, which reflects a 39 per cent decline from the import level of $37,030,000 in 1953. Switzerland and West Germany were the principal sources of imports. Shipments from Switzerland amounted to $7,023,000—about 31 per cent of the total imports. West Germany, the chief source of imports during 1953, ranks second in importance in 1954, with imports estimated at $6,837,000—about 30 per cent of total imports.

Republic To Expand at Gadsden

Republic Steel Corp. will go ahead with its plans to install cold rolling facilities at its Gadsden, Ala., plant.

Republic is in process of "deciding whether we should transfer equipment from some of our northern mills or purchase new equipment for Gadsden," C. H. White, Republic's president, said in a speech in that city on Feb. 16.

"One thing is sure," said Mr. White, "we have definitely decided to install a continuous galvanizing line at Gadsden, together with capacity for rolling a moderate amount of cold-rolled sheets. This has been our intention right along, and we expect to have the equipment installed sometime in 1956."

By E. C. KREUTZBERG *Washington Editor*

Rep. Patman's look at industry's profits hints how . . .

Democrats Gun for Big Business

ARE THE BIG companies getting bigger and the small companies getting smaller? Rep. Wright Patman (Dem., Tex.) wants to know. As chairman of the House Small Business Committee, he may be giving an indication of how the Democratic attack on big business will be staged in this session of Congress.

"What is the answer to this problem?" asks Mr. Patman. The reply or replies, he says, "will depend on fuller exploration and understanding. It will be the purpose of our committee to explore these problems and to make all the facts known, so that the House may act on small business bills with informed judgment." Some "facts" being studied include a comparison of profit ratios between small and large companies.

Some Agreement—Both parties are in agreement that the Small Business Administration should be continued as a separate, independent agency to help small business. Two Republican bills call for extension of SBA for two more years.

Sen. John J. Sparkman (Dem., Ala.), slated to head the Senate Small Business Committee, has introduced the Democrat's bill which would extend the life of SBA for two years, torpedo the present SBA Loan Policy Board, increase the ceiling on individual loans from $150,000 to $500,000 and force the SBA to charge a lower interest rate on participation loans. This would be about the same rate of interest now charged for direct loans.

Democrats are also proposing that small business should get a better break on armed services procurement.

Too Slow—There is likewise a growing feeling that SBA moves in slow motion. It takes 90 days to approve a loan application and another 70 days to turn over the money to the applicant.

Everyone, however, is satisfied with the more liberal loan policy of recent months. As an example: From the fall of 1953 to Jan. 15, 1955, only 1130 loans for $60 million and 987 disaster loans for $5.5 million were approved. In the month of December, 1954, SBA considered 283 applications for $13.9 million and approved 103 requests for a total of $4.1 million.

Recommends Extension—President Eisenhower, in his State of the Union message, did not call for continuation of the SBA beyond June 30, but did ask for an extension of the "Small Business Act."

U. S. Buys Raw Materials . . .

Quantities bought through Dec. 31, 1954, under the government's purchase programs include: Domestic tungsten, 1,460,051 (20-lb units); manganese, 11,727,438 (22.4-lb units); chrome, 77,399 (22.4-lb units); mica, 4816 (22.4-lb units); beryl, 557 (20-lb units); asbestos, 717 (20-lb units); columbium-tantalum ores and concentrates, 7,354,279 lb.

These programs have been established to stimulate the search for and production of strategic and critical materials in the U. S.

ODM Extends Time Limits . . .

The Office of Defense Mobilization has extended time limitations on ten expansion goals in the transportation field. This action, taken on the recommendation of the Defense Transport Administration, sets Dec. 31, 1955, as the final date construction can begin on equipment or facilities to be eligible for fast tax write-offs.

Goals involved are: Freight cars, locomotives (diesel), inland waterway vessels (specified types), ore carriers, railroad terminal and road facilities, warehouse and storage facilities, motor truck and terminal repair installations, inland waterway terminals, port facilities and railroad passenger cars.

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If your production equipment is slow, inefficient, old and expensive-to-operate, and you would like the finest in modern, high-speed, labor-saving machinery for leveling, processing, bending, forming, cold drawing, coiling, cutting, or feeding of **steel and non-ferrous metals**, put this top-flight, problem-solving crew to work for you now. Just call or write

McKAY MACHINE COMPANY, YOUNGSTOWN, OHIO

YOU CAN'T BEAT

McKAY-Built

METAL-WORKING MACHINERY

WHEN IT COMES TO . . .

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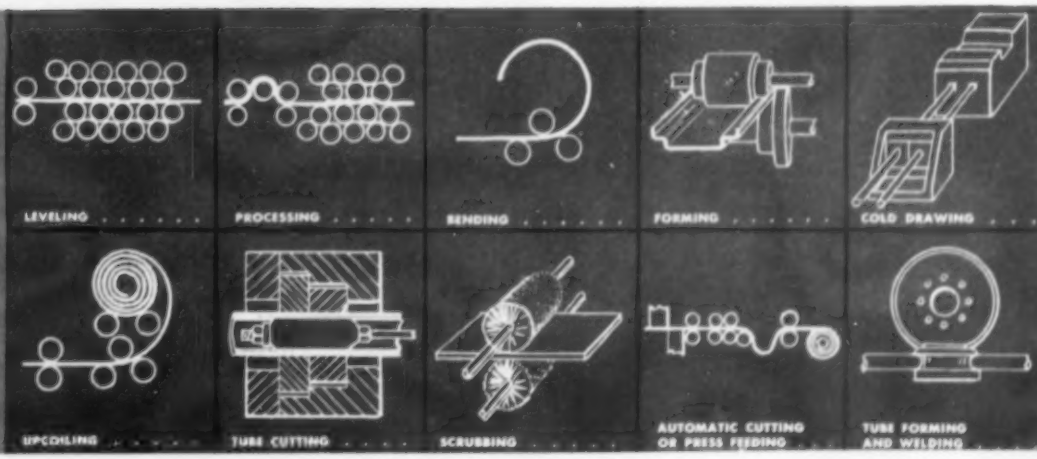

POLLOCK

chosen to construct McKee Pelletizing Machines

The William B. Pollock Company has been chosen by Arthur G. McKee & Company to construct the six (6) pelletizing machines for Reserve Mining Company's new plant at Silver Bay, Minnesota, to process taconite. These pelletizing machines will be built in Pollock's Youngstown, Ohio, plant, shop-erected complete, test run, then thoroughly match-marked, disassembled, and shipped by rail in such a way as to insure quick and efficient field erection.

Pollock is known the world over for its reliable, efficient, heavy steel construction. You, too, can benefit from Pollock's broad experience.

POLLOCK ALSO MAKES . . .

Miscellaneous Welded and Riveted Steel Plate Work for Blast Furnaces and Steel Plants, Oil Refineries, Chemical Plants and Allied Industries.

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Equipment Seller Norris Sells Ideas First

"SELLING is creating. A good industrial salesman does more than write orders." Denison Engineering Co.'s Paul W. Norris says that, and he can prove it.

The director of sales for the Columbus, O., firm is introducing a new variable-volume vane pump this month. In developing it, he and his 70-man department did more than the usual salesman's missionary work. They worked on the product two years—with engineering, to decide on design; with customers, to survey what was wanted in the proposed Multipump.

Triple-Threat—"In industrial selling today," says Paul Norris, "a man has to be a salesman, an engineer and a market researcher. One of the big jobs is keeping track of customers' needs.

Mr. Norris spends a lot of his time on market research—gaging industry's requirements for new small presses, hydraulic pumps and controls. As a result, most of Denison's development projects were suggested by sales.

Committee Men—Every new idea gets attention, but they don't all become engineering projects. First they must be approved by Denison's research committee consisting of the general manager, assistant to the president, treasurer and directors of engineering and sales. Mr. Norris and the director of engineering decide what ideas should be submitted to the committee.

While that development phase is fascinating, the sales manager must do many other things, too. "I spend the greatest part of my time working with and guiding our sales force," he says. "I try to put the right man in the right spot."

Spot jobs take his time, also. In January, Mr. Norris was deep in planning the opening of a new Midwest regional branch in Chicago. Denison is starting over-the-counter selling for all its products and now has four sales-warehouse-service centers set up to do that merchandising. "We're decentralizing sales to increase our efficiency and service to customers," he says.

First Job—Although only 39, Paul Norris has been with Denison more than 20 years. He started on summer jobs, then worked in the plant, did a hitch in engineering (a must for Denison's top salesmen). He headed sales for the hydraulic pump and control division, then became director of all sales 13 months ago. He took a year out from Denison in 1951 to go to Washington to set up the Metalforming Equipment Section for the National Production Authority, now Business & Defense Services Administration.

Is he good at the job? "Let performance answer that," says William C. Denison, president. "We had a promising 1954; sales were higher than in 1953, despite a decline for most of metalworking."

Make Marginal Credit Accounts Good Business

1. Visit your marginal accounts—as you should *all* accounts—to learn more about the individuals, their company and operations.
2. Make the normal objective checks for an account's rating, but consider, too, the subjective factors—has the man got the necessary know-how, initiative and integrity to succeed?
3. Offer assistance to the marginal account and try to help him improve his operations.
4. Develop co-operation between the sales and credit departments. A salesman with a good understanding of the credit problem can save many credit headaches.
5. Maintain a continuous check not only on marginal but all accounts so that trouble spots can be spotted early.

Help Cure "Problem Accounts"

With diplomacy and consultation, marginal credit accounts can be helped through rough periods and kept as customers. Each case must be treated individually

MARGINAL CREDIT accounts can often spell the difference between operating at a profit and operating at a loss.

That's why, with sales competition tightening, credit management is playing a greater role on the sales team. Today's credit problem isn't serious (see table), but many accounts need help. An intelligent approach to them can help expand your sales.

Help Your Account—"There's no rule-of-thumb approach," credit executives point out. "But if the account is honest and capable, chances are good that you can help him—and keep a customer. If the account is intentionally bad, drop him!"

Most "problem account" cases begin one of two ways: 1. The customer calls on the credit manager and states that he's in trouble and can't meet his payment deadline. 2. The customer lets the bill ride and the credit manager must take the initiative.

Diplomacy—The first instance presents the ideal situation for a "perhaps I can help you" approach by the credit manager. The second takes a little tact, but the objective is still the same—try to help the customer over the rough spots; keep him a customer.

What kind of help? It varies. Each case must be treated individually. One method which has worked out satisfactorily in some cases in the Chicago area is the creditors' committee approach, says J. S. Ure, general credit manager of Joseph T. Ryerson & Son Inc. The creditors of the firm in difficulty form a committee to assist the company—whose approval of the plan is required of course.

Committee Responsibility—Chief function of such a committee is consultation, although under most setups the committee has certain authority: Countersigning checks, stock control, salary and dividend control. The committee can advise company officials in production, sales, office procedures or any other operational function.

In one instance in the Midwest, a creditors' committee found that the weak spot in the company it was assisting was in production. The key production man had died and his replacement was definitely a weak link. The committee, after analyzing the problem, decided to hire an outside production specialist—at a salary considerably higher than the job normally paid. Within a year, company profits began to appear. Creditors realized 100 per cent on their bills. The production man they hired is still on the job!

Customer Analysis—Normal checks on a customer's credit rating include Dun & Bradstreet, bank references, credit association rating exchanges and company auditing reports.

An objective analysis of such information is good and necessary, say officials of A. M. Castle & Co., Chicago. But, they add, a subjective appraisal is also valuable.

Status Quo in Accounts Receivable

But Economic Shifts Bring More Caution on Credit

	% Discounting or Paying When Due			% Accounts Past Due		
	Nov. 1954	Aug. 1954	Nov. 1953	Nov. 1954	Aug. 1954	Nov. 1953
Metals, Iron & Steel Brass, Alloys, Copper						
Manufacturing, Industrial Accounts	84.9	83.2	86.4	15.1	16.8	13.6
Wholesale, Distributor, Jobber Accounts	86.9	88.5	83.6	13.1	11.5	16.4
Industrial Machinery & Equipment						
Manufacturing, Industrial Accounts	87.4	83.6	86.1	12.6	16.4	13.9
Wholesale, Distributor, Jobber Accounts	85.5	85.1	86.3	14.5	14.9	13.7
Electrical Equipment & Supplies						
Manufacturing, Industrial Accounts	89.7	86.7	86.7	10.3	13.3	13.3
Wholesale, Distributor, Jobber Accounts	80.5	78.1	86.4	19.5	21.9	13.6

Source: Survey of 29 cities by Credit Research Foundation Inc., New York.

Castle credit officials make it a practice to visit their accounts to get to know the contact personally—what his know-how is, what facilities his company has and how it operates in general.

Castle Case History—In one instance, a Castle customer came to the credit officials for assistance. His production was good and sales were keeping pace, but still he was having difficulty. A check indicated that the man had a poor invoicing system. Correction of this, plus some suggestions by Castle creditmen on improving bookkeeping procedures, proved to be the answer. As time passed, the man became a better customer for Castle.

Another important service credit management can provide its customers is in helping to arrange financing. There are many instances where a credit man has come to the rescue of a customer who was having trouble finding proper financing—his bank was too small to handle the loan he required or he had been paying exorbitant interest rates. The credit manager may introduce the customer to a bank who can handle the loan at normal interest rates.

Three Plans—Motch & Merryweather Machinery Co., Cleveland, has set up three financing plans for its customers—a 12-month plan in which Motch & Merryweather carries the loan and a 3-year and 10-year plan in which C.I.T. handles the financing. "We try to analyze the customer's credit problem and then set up a plan which best suits his individual need," officials state. "If a customer gets into difficulty, we try to work out the arrangements according to contract. But if it's an honest mistake or situation in which the customer is pinched, we'll make an attempt to help him out."

Last year posed some difficult credit problems for some metalworkers—high inventories and an increase in business failures were factors along with just plain tougher business conditions. The National Association of Credit Men, New York, says collections are good today and that a "better than nominal" improvement is due this spring.

Marginal Accounts—How much emphasis you need to place on making marginal accounts good business depends upon what business you are in. For the big steel mills who can still pick and choose pretty much, marginal accounts aren't a problem. On the other end of the line, however, are warehouses. It's estimated that up to 15 per cent of their accounts might fall into this classification.

You're probably somewhere in between the two. The marginal account will always be a problem, but an intelligent approach can still make it good business to court. And who knows when the marginal account will develop into your biggest customer?

No Collapse in Tube Sales

Gleaming teeth helped collapsible metal tubes paste up shining sales in 1954. Half the 960 million tubes shipped (second only to 1953) were used for dentifrices. Industrial use was up; adhesives, paints and dyes gained.

Some 48 per cent of all tubes shipped were aluminum, but lead was the leader pound-wise. Tube makers last year used 19.5 million lb of lead, 6 million lb of aluminum and 1.3 million lb of tin.

Atom Research: $3.8 Million

Member companies of the Atomic Power Development Associates have approved a $3,815,000 budget for 1955. The money will be used for research and development aimed at finding economically practical ways of using nuclear fuels to generate electric power.

The new budget is nearly double that of last year. Since 1951, $3.5 million has been spent on the program. Walker L. Cisler, president of the Detroit Edison Co. and chairman of APDA's management committee, says 1955 projects will include construction of full-scale atomic power plant components—pumps, piping, heat exchangers and other devices for handling liquid metals at high temperatures.

In addition, a special high temperature boiler or steam generator will be built and tested under simulated reactor plant conditions. All of the equipment will be assembled and tested in Detroit.

APDA members pool specialists and share in the cost of the research. Membership includes 33 electric utility, manufacturing, engineering and research companies.

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Latest Improvements Include: Model 75

PENDANT CONTROL

Exclusive Bullard design, for maximum machine control from a movable pendant station. Start and stop spindle; selection of speeds, feeds and directional movement of all heads in feed or traverse are quickly and easily accomplished from the Pendant. Interlocks and a stop-all stick provide safety for both operator and machine.

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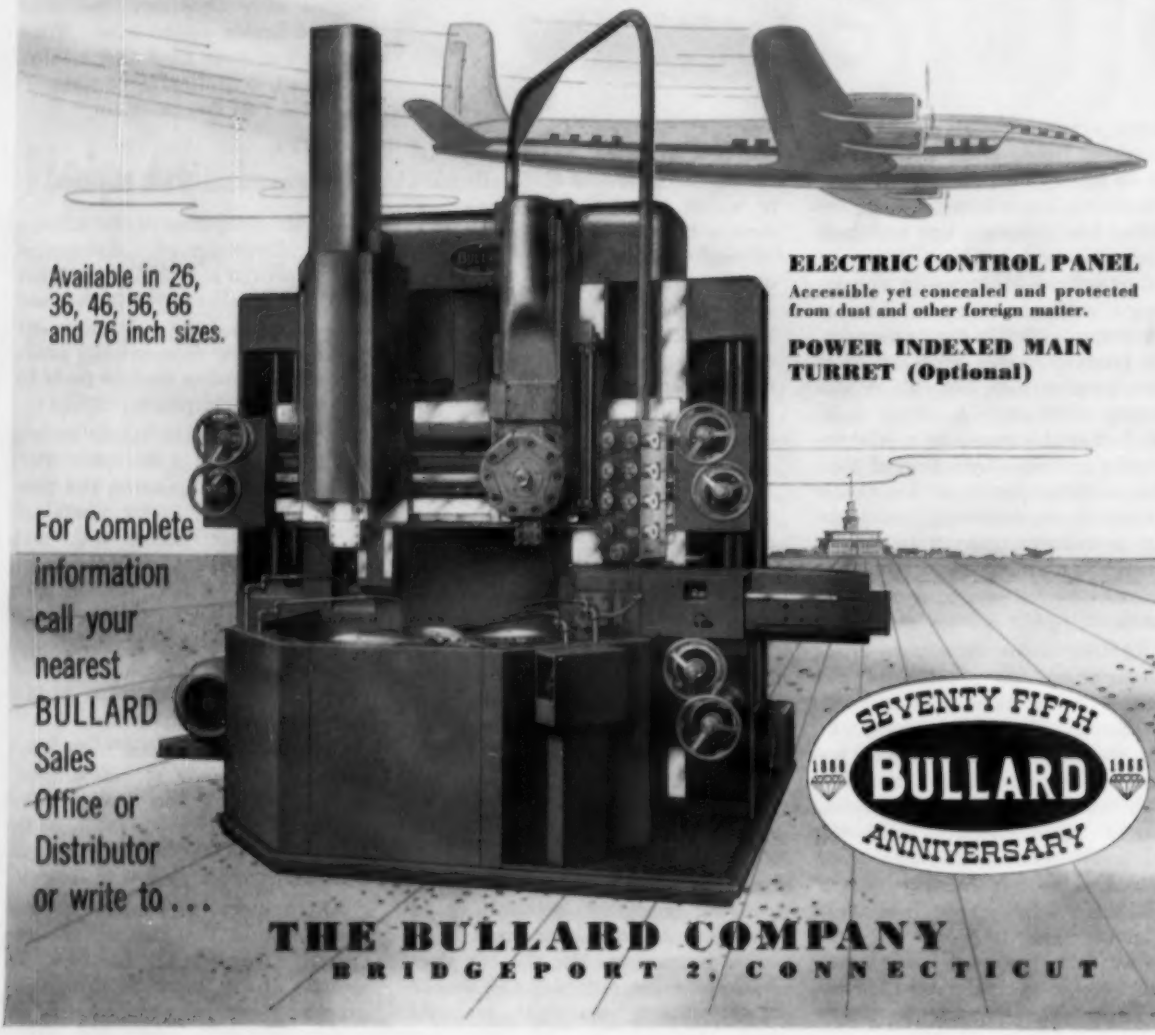
To assure the smooth, accurate, fine finish cutting ability of the new Cut Master Model 75, precision feed screws with adjustable bronze take-up nuts are provided for feed and traverse movement of all saddles, slides and ram. Five sided turret for "run of the mill" jobs. Four sided turret for production jobs.



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POWER INDEXED MAIN TURRET (Optional)

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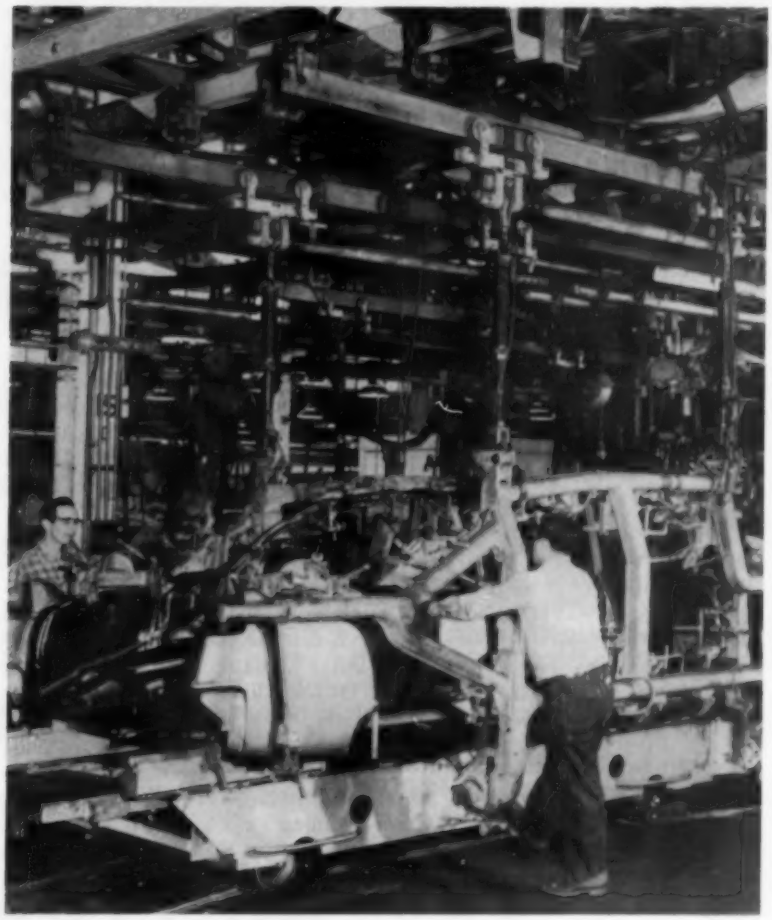

Fleetwood craftsmanship helps show . . .

How Cadillac Does It

DID YOU know that the Cadillac Fleetwood Series-60 Special derives its "Fleetwood" designation indirectly from the modest town of Fleetwood, Pa.? Or that Fisher Body sold Cadillac the first closed body as standard equipment one year before Fleetwood even existed?

Details—This is the kind of information that can be used to start a conversation at any athletic club in the country. In case you're pressed for the urgent details, here's the pitch. Fleetwood Body Corp. was formed in 1911 in the town of Fleetwood, Pa., to build custom bodies back in the days when you could buy a chassis and go from there. In 1925 the body builder was bought by Fisher Body Division of General Motors Corp. and in 1930 was moved to its present six-story location where it has since built bodies for Cadillac.

Assembly of stampings takes place on the first floor. That famous Cadillac rear quarter panel merits a separate build-up of its own on a merry-go-round. As a final touch, the tail light housing opening is trimmed and reformed in a small press after assembly to insure perfect fit. The reason: Slight spaces between the housing and fender permitted gasoline fumes from the tank vent to seep into preliminary jobs in a most un-Cadillac and Fleetwoodless sort of way.

Buildup—The rear quarter panel is then loaded into a waiting side-framing fixture and continues around a second merry-go-round in which the side is built up. Included are such parts as center-door posts, rocker panels, roof rails, etc. This side-framing fixture, or gate, finishes its loop by joining the main body build-up line (see photo). The floor pan already has been positioned on the lower portion of the body fixture. As the sides move in, the two fixtures are hooked onto the floor pan buck, forming a movable body fixture which continues on down the line.

Crosspieces for width control and rigidity are set into the fixture as it moves along and the appropriate front and rear cowl parts are welded in, roof welded on, etc. In the space of perhaps 100 ft the body is rigid and ready to continue on its own while the left and right gates peel off to repeat the cycle. This method of body building was adopted by Fisher on 1954 models because of the increased complexity of body structure with new styles. It is notable for its compactness and efficiency.

Routine — After leading and other body-in-white finishing operations, each shell is given inspection-repair and final inspection for quality and is shuttled into a bank by body type for scheduling into body-finish operations. When the call comes, the body makes an uninterrupted trip by conveyer for six floors. On the sixth floor it enters the paint sequences.

Asphalt tile floor carefully waxed gives a hospital-like atmosphere to the paint sections of the plant. The degree of cleanliness in this area well removed from other manufacturing operations is exceptionally high. About two gallons of primer are used on each body and 3.5 to 4 gallons of paint, including thinner. Paint specifications are the same, however, for other General Motors' bodies.

Careful Tailoring—In the trimming of Cadillac bodies, bolts of cloth are carefully classified by

shades, giving as many as four or five different variations of a single specified color. This prevents variation that sometimes shows up in cars of less strict color tolerance, since seats and interior trim are all cut from bolts with the same shade rating.

All leather portions of the upholstery as well as the cloth portions are trimmed from dyed whole skins and sewed by craftsmen at Fisher's Fleetwood plant. Perhaps more than any other portion of operations, the sewing and trimming departments at Fleetwood reflect the distinctiveness associated by most with Cadillac. Working in a crafts shop, the workers trim the bodies in something approaching a custom-built decor.

Thus, Fleetwood Body by Fisher which has built the roadhouses for some of the country's most notable personages.

Oldsmobile Super 88

Those in World War II in Europe will remember the German 88, a potent artillery piece. Definitely in the dynamite class is the Oldsmobile Super 88, a fine weapon for traffic light warfare.

This machine will do 0-60 mph in about 11 seconds and has delightful output in the cruising range for passing. The instrument panel is a fine combination of functionalism and has an aesthetically pleasing design despite lavish chrome treatment. Handling of the car is notably good, particularly in the corners.

Interiors are nicely appointed. In the four-door sedan driven, they appear to be durable as well as pleasing. Exterior styling, in the opinion of many, sets the pace for the GM family. In the performance department, the car matches its looks. This is a good car for the man who enjoys zestful comfort.

Chrysler Accounts for 18%

Chrysler Corp. is accounting for more than 18 per cent of the nation's retail car sales, says L. L. Colbert, president.

Latest figures from the last ten days of January indicate the company has not achieved its announced goal of 20 per cent of total car sales, he states, "but we are well on our way toward it."

The Chrysler executive thinks 1955 might be the biggest sales year for the auto industry and that "it certainly is going to be one of the biggest." His corporation's current estimate is that the industry will sell 5.8 million cars this year, second only to the 6 million sold in 1950.

He reports that Chrysler intends to build and sell 400,000 passenger cars in the first quarter of 1955 and that 130,000 were shipped in January. The firm shipped 300,000 cars in the final quarter of 1954 and has a backlog of orders amounting to 250,000.

Although Chrysler's production is not at the full capacity of its manufacturing plants, Mr. Colbert says operations are currently at the highest level possible. Some of the firm's suppliers can't deliver in the quantities needed.

Exhaust Notes

DeSoto recently announced dual exhausts as special equipment for both the Fireflite and Firedome lines. The reason: DeSoto undoubtedly wanted to use them on its Daytona Beach entry.

A new Cadillac luxury wagon that will top the Eldorado in price and compete with the Lincoln Continental in prestige is reportedly in the works. Reports indicate the car will be closely patterned after the Eldorado Brougham shown at the Motorama this year. This would be in addition to the LaSalle bit reported last week.

Now in the works is a Ford Dearborn foundry automation program.

As the auto industry continues to set new weekly records as well as a record for the month of January, the UAW-CIO begins its "viewing with alarm" pitch. Estimates that 72 per cent of total yearly output is currently in prospect by June bring "inevitable unemployment" shouts, which are, of course, tied in with "irresponsible production scheduling." It's all part of the guaranteed annual wage build-up which ignores the "strike while the iron is hot" pattern of auto sales.

In case you're interested in these things, Dodge came out with highest "batting average" among front-running stock cars in Nascar competition last year. Hudson won more races, but more Hudsons were entered. Hudson and Dodge had more than half the cars finishing in the first ten places.

Chevrolet advises the first 1955 Chevvie to reach Argentina sold for $39,600 which tends to indicate price-shaving down there is not quite so prevalent as in this country. The firm also notes that building only two-door sedans, it could make 168,614,770,048,751,370,240,000 cars without duplication. Just think what that means to dealers who want to keep a complete stock. Chevrolet builds 14 models!

Daytona Beach Speed Week, covered in this column last year, looms even more important in 1955. Nearly every factory is engineering a car or two unofficially and plenty of preparation is taking place to insure "proper performance." The philosophy: "If our car is running, we want it to give the public a true picture." Translation: Daytona Beach offers a good way to publicize the taboo top speed figures.

Auto, Truck Output

U. S. and Canada

	1955	1954
January	780,780†	594,467
February		573,801
March		672,485
April		676,248
May		621,262
June		623,732
July		543,540
August		523,799
September		364,441
October		312,078
November		616,395
December		761,926
Total		6,884,174†

Week Ended	1955	1954
Jan. 15	184,362	149,841
Jan. 22	190,155	146,741
Jan. 29	190,468	143,654
Feb. 5	190,140	139,042
Feb. 12	190,325	141,570
Feb. 19	195,500*	148,257

Sources: Ward's Automotive Reports. †Preliminary. *Estimated by STEEL.

A PINCH OF LEAD FOR FAST, CLEAN CUTTING

Lead added to Aristoloy Steels acts as a lubricant and reduces friction between tool face and chip. It also produces a better chip formation, allowing higher machining speeds to be employed. Many users report improved machinability ratings, up to 100 for leaded steels as compared to 60 or 70 for the same material unleaded.

Better finish and longer tool life are additional benefits. Heat treating and mechanical characteristics remain unchanged.

Call your local representative or write today regarding application of leaded Aristoloy to your product.

ARISTOLOY STEELS

COPPERWELD STEEL COMPANY
(STEEL DIVISION) WARREN, OHIO

BALL STUD

Use of 8640 Leaded improved automatic screw machine production nearly 40% for a large job shop. Production per machine hour increased from 108 to 150 pieces.

SPUR GEAR

A machine tool manufacturer cut machining time ½ by switching to Aristoloy 4140 Leaded. And finish was greatly improved—from FAIR to EXCELLENT.

SPIRAL GEAR

Machinability was increased 25% when Aristoloy 4140 Leaded was substituted for non-leaded AISI equivalent. Biggest saving from a cost standpoint was a 75% improvement in tool life.

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TIMKEN® seamless tubing eliminates drilling, saves steel and machining time!

NO need to bore out bar stock to make hollow parts when you use Timken® seamless tubing. The center hole's already there! You don't waste steel but only pay for the steel you use.

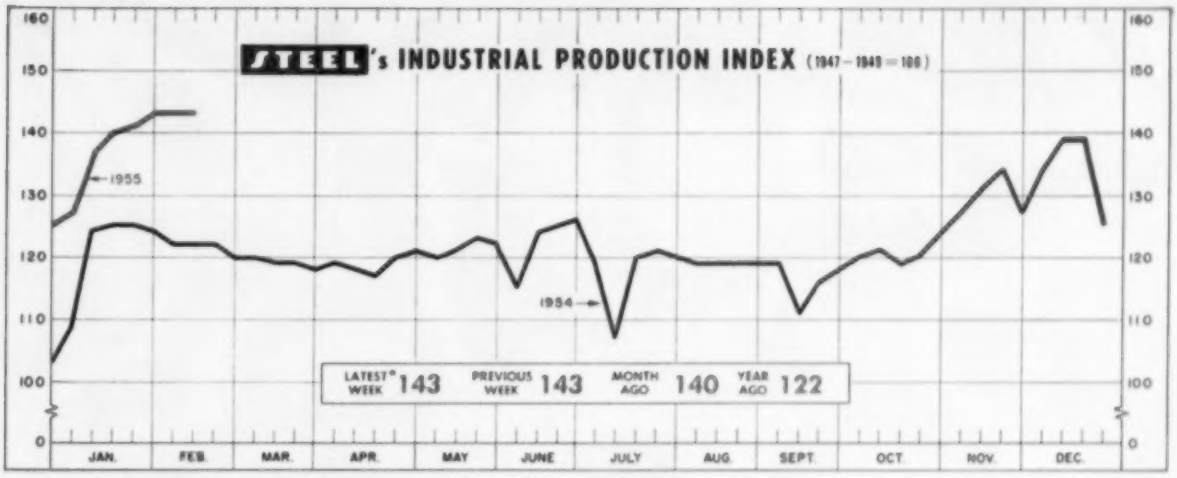
Because you don't have to bore the center hole, you save machining costs, too. Finish boring is often your first production step. Screw machine stations can be released for other jobs. So you add machining capacity without adding machines.

Our engineers will save you even more money, too, by studying your problem and recommending the most economical tube size for your hollow parts jobs.

You're assured of the highest internal quality with Timken seamless tubing. The piercing process by which it's made is basically a forging process. It has a uniform spiral grain flow for greater strength, and a refined grain structure which brings out the best quality of the metal. And the Timken Company's rigid quality control keeps this quality uniform from tube to tube and heat to heat. The Timken Roller Bearing Company, Steel and Tube Division, Canton 6, Ohio. Cable address: "TIMROSCO".

YEARS AHEAD — THROUGH EXPERIENCE AND RESEARCH

SPECIALISTS IN FINE ALLOY STEELS, GRAPHITIC TOOL STEELS AND SEAMLESS TUBING



*Week ended Feb. 12. Based upon and weighted as follows: Steel Output 35%; Electric Power Output 32%; Freight Car Loadings 22%; and Auto Assemblies 11%.

Steel, Auto Industries Lead Business Upward

INDUSTRIAL PRODUCTION is hitting new highs as measured by STEEL's industrial production index. For three weeks now it has been perking along at 143 (1947-1949=100). That's four points higher than all-time peaks hit back in 1953.

For January, STEEL's index averaged 137. For the same period the Federal Reserve Board's index, measuring a wider range of business, will probably be around 132 (1947-1949=100). That compares with FRB's 124 in January a year ago and 1954's high of 130 in October and November. The 132 will be highest since October, 1953, when the index measured 136.

Best Weeks—Pushing STEEL's index to record levels are soaring steel production and record auto and electric output. The nation's steel mills have turned out over 2 million net tons a week for more than a month. For the week just ended, production is estimated at 2129 net tons by the American Iron & Steel Institute. That equals 88.2 per cent of 1955's record capacity and is the best week since November, 1953.

Good steel activity helped make the primary metals industry one of the bright spots in employment in January. While many industries felt the usual seasonal drop, primary metals took on more workers and lengthened the workweek.

Record—Autos are going full tilt. Passenger car production in the week ended Feb. 12 set an all-time record for a single week. Some 167,075 cars were turned out, says *Ward's Automotive Reports*. The old record was 164,876 set in June, 1950. Production might be even higher were not some producers outrunning their suppliers.

Electrical power output helped along by cold weather climbed over 10 billion kilowatt-hours again. The record 10,047 million kwhr was set in the week ended Feb. 5. Production is running

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Production (1000 net tons)[2]	2,129	2,095	1,779
Electric Power Distributed (million kwhr)	10,000[1]	10,047	8,684
Bitum. Coal Output (1000 tons)	8,700	8,835	7,835
Petroleum Production (daily av.—1000 bbl)	6,705[1]	6,721	6,322
Construction Volume (ENR—millions)	$298.9	$279.9	$196.9
Automobile, Truck Output (Ward's—units)	190,325	190,140	141,570
TRADE			
Freight Car Loadings (unit—1000 cars)	638[1]	641	624
Business Failures (Dun & Bradstreet, no.)	248[1]	264	277
Currency in Circulation (millions)[3]	$29,779	$29,758	$29,923
Dept. Store Sales (changes from year ago)[3]	−1%	+2%	−3%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$19,103	$21,258	$17,832
Federal Gross Debt (billions)	$278.4	$278.5	$274.8
Bond Volume, NYSE (millions)	$23.5	$19.6	$21.7
Stocks Sales, NYSE (thousands of shares)	17,108	16,271	9,441
Loans and Investments (billions)[4]	$85.4	$85.7	$80.7
U. S. Gov't. Obligations Held (billions)[4]	$35.8	$36.4	$33.0
PRICES			
STEEL's Finished Steel Price Index[5]	194.53	194.53	189.74
STEEL's Nonferrous Metal Price Index[6]	228.6	226.8	203.2
All Commodities[7]	110.3	110.4	110.5
Commodities Other Than Farm & Foods[7]	115.5	115.4	114.4

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1955, 2,413,278; 1954, 2,384,549. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-1939=100. [6]1936-1939=100. [7]Bureau of Labor Statistics Index, 1947-1949=100.

Your best cancer insurance...

"LIFETIME" POLICY... See your doctor *every year* for a thorough check-up, no matter how well you feel.

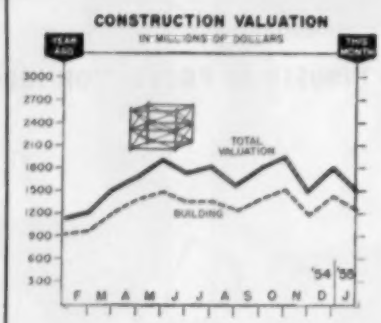
"DAY-TO-DAY" POLICY ...See your doctor *immediately* at the first sign of any one of the seven danger signals that *may* mean cancer (1) Any sore that does not heal (2) A lump or thickening in the breast or elsewhere (3) Unusual bleeding or discharge (4) Any change in a wart or mole (5) Persistent indigestion or difficulty in swallowing (6) Persistent hoarseness or cough (7) Any change in normal bowel habits.

Many cancers can be cured, but only if properly treated *before* they have begun to spread or "colonize" in other parts of the body.

For *any* information about cancer just call the American Cancer Society or write to "Cancer" in care of your local Post Office.

American Cancer Society

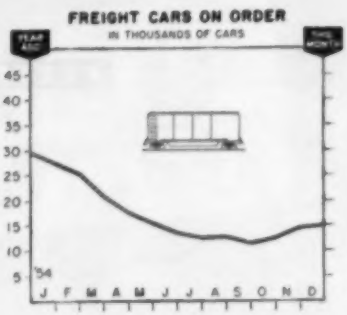
THE BUSINESS TREND



37 States

	Total 1955	Total 1954	Building 1955	Building 1954
Jan.	1,504.5	1,151.9	1,255.1	935.6
Feb.	.....	1,221.3	.....	977.5
Mar.	.....	1,527.5	.....	1,199.8
Apr.	.....	1,691.9	.....	1,401.6
May	.....	1,925.3	.....	1,497.6
June	.....	1,733.3	.....	1,376.7
July	.....	1,836.9	.....	1,386.9
Aug.	.....	1,572.9	.....	1,243.3
Sept.	.....	1,816.2	.....	1,424.2
Oct.	.....	1,965.3	.....	1,522.8
Nov.	.....	1,498.9	.....	1,199.8
Dec.	.....	1,828.8	.....	1,463.9
Total	.....	19,770.2	.....	15,628.8

F. W. Dodge Corp.



	Awards 1954	Awards 1953	Backlogs (end of month) 1954	Backlogs (end of month) 1953
Jan.	2,942	7,406	27,959	77,414
Feb.	2,057	2,284	25,441	71,882
Mar.	348	3,247	20,966	68,553
Apr.	909	2,103	17,817	62,637
May	1,071	1,645	15,615	57,345
June	1,139	1,453	13,860	52,315
July	883	1,671	12,889	47,423
Aug.	2,425	3,913	13,013	45,735
Sept.	2,396	3,867	11,993	42,198
Oct.	2,704	1,705	12,853	35,171
Nov.	3,754	2,858	14,805	31,869
Dec.	2,685	2,159	15,317	29,950
Total	23,313	34,310		

American Railway Car Institute.

Charts copyright 1955 STEEL.

about 15 per cent better than it did a year ago.

Weak Spot—The weak spot in STEEL's index is freight car loadings. Loads are running around 15,000 more cars weekly than in early 1954, but traffic is still little better than 80 per cent of the 1947-1949 average.

Using the past few years as precedent, loadings should turn uphill early in March and continue rising through the second quarter. How much of an influence the rise in loads will have on railroad buying remains to be seen. But some increase over last year's low levels is almost certain.

Foundries Move Ahead . . .

Some indication of loosening rail purse strings is a report from National Malleable & Steel Castings Co. That firm's railroad equipment orders are highest since last June. Total incoming business is at the highest rate since early 1953, says Cleve H. Pomeroy, president.

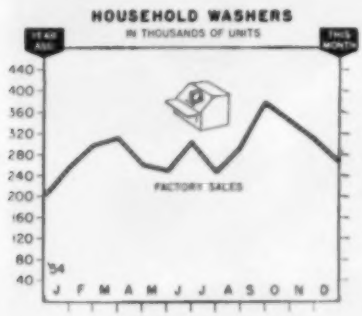
That points up improving business in the foundry industry generally. Another good sign is that orders for foundry equipment were on the upgrade in December. As measured by Foundry Equipment Manufacturers Association's index, orders were at 113.9 (1947-1949=100). The year's low was 61.4 in November.

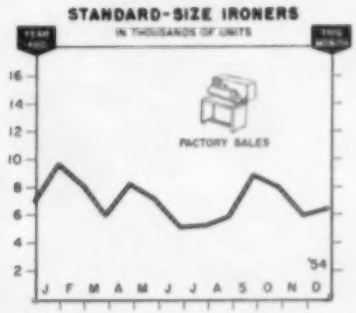
Surprises in Construction . . .

Construction is still booming away with a few surprises showing up. One is federal work which is double that of a year ago, according to *Engineering News-Record*. Another is industrial building, for which contracts were $229 million in January, up 171 per cent from a year ago. Since forecasts were for only a 6 per cent rise for all of 1955, a pleasant surprise for the year is quite possible.

State and municipal building, a mainstay last year, are off slightly, but improvement seems on the way. The latest week reported by *ENR* was best of the year. Road building is holding up well, and should stay that way.

And along with rising volume are rising prices—at record highs, according to *ENR* cost indexes. Costs have been inching upward over the past five months—and at a faster rate than a year ago. As a result, *ENR* indexes are 5.1 per cent higher than they were this time last year.





	Sales Billed—Units 1954	1953	1952
Jan.	249,956	277,309	213,998
Feb.	295,171	326,604	255,864
Mar.	307,862	345,989	248,431
Apr.	258,712	288,474	217,211
May	246,944	286,515	213,668
June	303,455	304,086	274,457
July	242,863	228,268	207,593
Aug.	293,243	291,260	254,537
Sept.	379,666	340,532	283,732
Oct.	339,169	310,867	327,814
Nov.	308,368	238,153	293,079
Dec.	264,803	191,570	310,661
Totals	3,490,212	3,429,627	3,101,045

American Home Laundry Mfrs. Assn.

	Factory Sales—Units 1954	1953	1952
Jan.	9,792	24,395	15,636
Feb.	8,208	22,586	17,630
Mar.	6,025	18,066	13,913
Apr.	5,388	14,060	8,935
May	7,210	9,323	12,852
June	5,185	12,529	17,654
July	5,227	9,626	15,025
Aug.	5,925	8,067	16,477
Sept.	8,908	9,113	22,492
Oct.	9,021	11,666	25,204
Nov.	5,892	10,105	19,724
Dec.	6,427	8,908	16,798
Totals	86,205	154,464	202,143

American Home Laundry Mfrs. Assn.

Homebuilding May Slow Down...

A few dampers on the housing boom are beginning to show up. While most observers agree that 1955 will be a record or near-record year, they aren't so sure beyond that.

On the plus side are the large number of veterans who haven't used their G.I. loans, plus general consumer confidence in the economy. And, too, the nation's housing isn't getting any younger.

On the other hand, stronger competition in the money market seems likely and may put home mortgages to a stiffer test than last year, says Federal Reserve Bank of Cleveland. That would mean a slowdown of low down-payment, long-term loans.

The bank also points out another trend. Vacancy rates are going up. According to a survey made by a building materials manufacturer, vacancies were between 5 and 6 per cent in late 1954 and rising.

Spring Points the Way . . .

Some key to home building trends should show up in the spring. If builders cut back on starts, it will probably mean there is a substantial hangover of homes built in 1954. It also would serve notice that the boom is slowing down.

The annual increase in number of households in the country has slowed down from the high rates of the 1940s, says Bureau of the Census. Still, the gain of 800,000 annually since 1950 seems a good indication that a considerable number of homes will be in demand for some time to come.

Trends Fore and Aft . . .

Freight traffic on the nation's rivers and canals is showing a steady rise; now well over 6 per cent of all intercity freight is traveling that way . . . Steel strapping business will be up moderately in 1955, at least as far as Signode Steel Strapping Co. is concerned, says John W. Leslie, chairman. Strapping is regarded as a good barometer of general business . . . Nearly 10 million cathode ray tubes were sold in 1954, says Radio-Electronics-Television Manufacturers Association . . . Frigid weather has had a depressing effect on retail trade; department store sales are falling below year-ago levels after starting the year 10 to 15 per cent ahead.

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Not one strip rolling requirement in ten need be carefully "miked" to assure close width tolerance.

But that exceptional job is routine with Somers THIN STRIP. Monel, pure Nickel and Nickel alloys are rolled to within ±5% from .010" to .00075", with the same degree of accuracy in widths, and with the exact properties required by your product.

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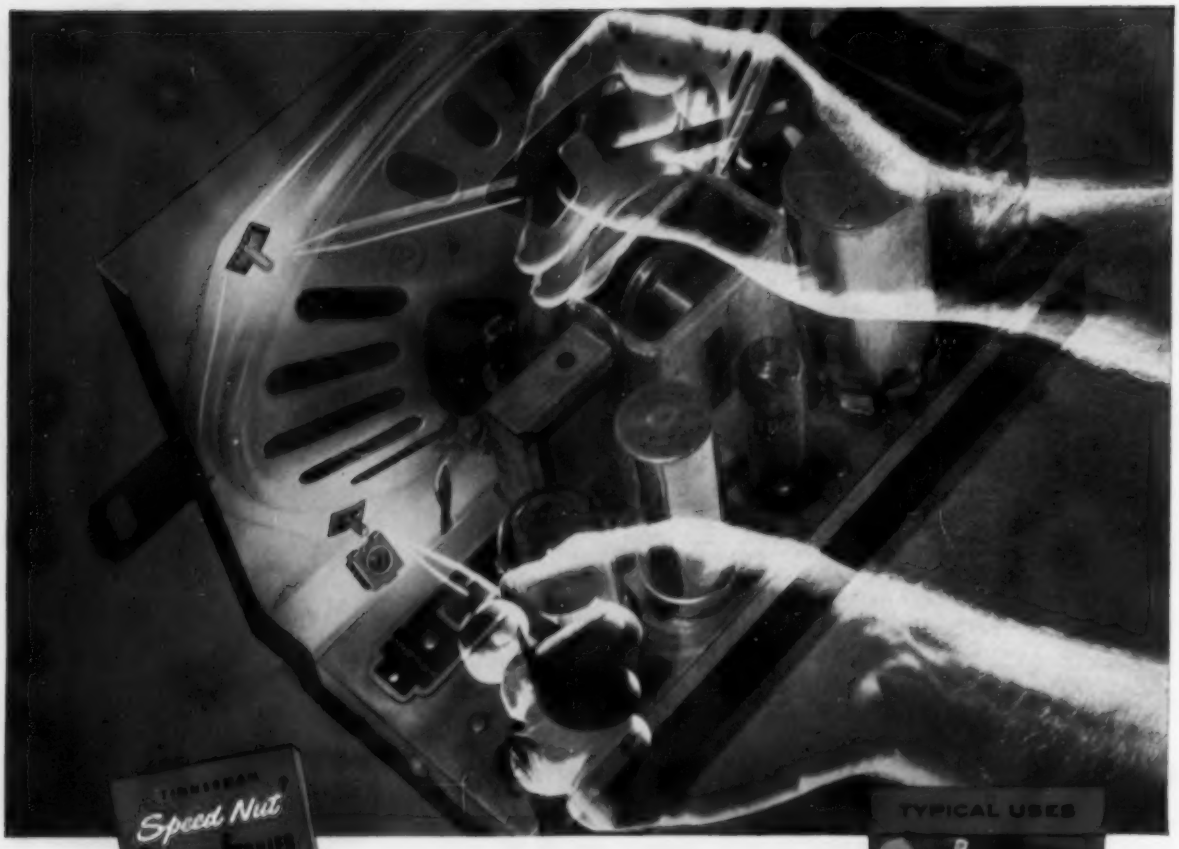

How to Cut Costs 75%... with Tinnerman SPEED GRIPS®!

Assembly and material costs cut from 12 cents to less than 3 cents—a saving of 75% on just one fastening application! That's the Tinnerman SPEED NUT Savings Story for the Automatic Radio Manufacturing Company, Boston, on its CUSTOM-BUILT AUTO RADIO LINE.

SPEED GRIP Nut Retainers replaced hard-to-fabricate tapped holes and weld-type nuts as the mounting fasteners on each set. SPEED GRIPS are quickly and easily snapped into square punched holes. No special tools or skills needed! Flat Type SPEED NUTS also provide a vibration-proof attachment of speaker to baffle.

And here's a "temper-saver" for the man who installs the radio in his car. SPEED GRIPS have "mechanical hands" that hold the nut in bolt-receiving position for blind location attachments. What's more, they "float" to compensate for any misalignment in mounting holes.

There are more than 8,000 shapes and sizes of SPEED NUT brand fasteners to help you save assembly time, material costs and handling. Write today for your "SPEED NUT Savings Stories" booklet of typical Tinnerman savings to industry.

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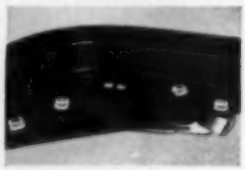
TINNERMAN **Speed Nuts**®
FASTEST THING IN FASTENINGS®

TYPICAL USES

SPEED GRIPS are applied by hand on this automobile floor pan.



Front seat grab handle of car is ready to receive bolts in final assembly.

SPEED GRIPS furnish a firm, sturdy attachment for television chassis mounting.

PAUL H. STARTZMAN
. . . heads Oliver Iron & Steel

ROBERT M. TERRY
. . . Seymour Mfg. president

DR. JAMES T. EATON
. . . Houghton & Co. v. p.-production

Paul H. Startzman, executive vice president, was elected president of **Oliver Iron & Steel Corp.,** Pittsburgh. **Thomas E. Boyd** was elected controller and assistant secretary.

R. M. Hammes was made general sales manager, Niagara Filters Division and Tolhurst Centrifugals Division, **American Machine & Metals Inc.,** East Moline, Ill. He succeeds **F. C. Weicker,** resigned.

Lewis H. Whitney was elected vice president and a director of **Whitney Chain Co.,** Hartford, Conn. He was formerly works manager.

Francis D. Holden was appointed manager of sales, **Macwhyte Co.,** Kenosha, Wis.

A. M. Harp returns to American Machine & Metals Inc., East Moline, Ill., as general sales manager of its **DeBothezat Fans Division,** succeeding **C. J. Gaspar.** Mr. Harp served for many years as DeBothezat sales manager. He recently has been vice president-general manager of Connecticut Telephone & Electric Co.

Leonard C. Schmidt joins **Worcester Pressed Steel Co.,** Worcester, Mass., as works manager in charge of tooling and production. He was with General Electric Co., serving as manager of manufacturing methods.

Robert M. Terry was elected president of **Seymour Mfg. Co.,** Seymour, Conn. He succeeds **Alton G. Wentworth,** resigned. Mr. Terry joined Seymour in September, 1954. He was previously affiliated with Abbott Ball Co.

Robert G. Hess was made vice president-operations, **Pesco Products Division,** Borg-Warner Corp., at Bedford, O. He was general manager, Watertown Division, New York Air Brake Co.

Robert M. Zimmerman was made general manager-operations, **Atkins Saw Division,** Borg-Warner Corp., Indianapolis.

Richards-Wilcox Mfg. Co., Aurora, Ill., named **Robert W. Gehring** purchasing agent to succeed **Clarence J. Nelson,** retired.

William H. Shinn was made sales manager, foundry division, **Gunite Foundries Corp.,** Rockford, Ill.

George J. Haislmaier was made sales manager, industrial division, **Modine Mfg. Co.** Racine, Wis.

E. L. Maguire will direct sales of all fabricated metal products of **Walsh Holyoke Division,** Continental Copper & Steel Industries Inc., with offices at Perth Amboy, N. J. He will continue as sales manager of the Alloy Fabricators Division.

Dr. James T. Eaton fills the new position of vice president-production at **E. F. Houghton & Co.,** Philadelphia. He was formerly director of research, and continues to head the research staff in addition to assuming responsibility of Houghton's oil manufacturing plants.

W. F. Bugenhagen was elected president, **Aluminum Goods Mfg. Co.,** Manitowoc, Wis. He was executive vice president and succeeds the late **A. J. Vits.**

Harry B. Sandman, for eight years assistant to the president, General Iron & Metal Co., Chicago, was named president of **Price-Watson Co.,** Chicago. He succeeds **Arthur M. Price,** who continues in an advisory capacity.

E. E. Anderson was elected vice president of **Metal & Thermit Corp.,** New York.

A. H. Miller was elected vice president of **Emsco Mfg. Co.,** Los Angeles. He assumes management of the newly acquired Johnston Pump Division.

B. J. Osborne was appointed assistant to the vice president and general manager of **Kaiser Steel Corp.,** Oakland, Calif. He was placed in charge of the new fabricating division which will operate the plant and facilities recently ac-

ROBERT V. SHARKEY
. . . Vickers gen. purchasing agent

PAUL McVICKER
. . . assumes added duties at Electromet

PHILIP H. ROLLINGS
. . . Blaw-Knox Equipment Div. p. a.

quired by Kaiser from Union Steel Co. of Los Angeles.

Robert V. Sharkey was made general purchasing agent of **Vickers Inc.**, Detroit.

J. D. Allen Jr. was elected vice president and general manager of **Hamilton Steel Co.**, Cleveland, to succeed **E. W. Harwell**, who resigned as president. **N. E. Willkomm** was made general sales manager to succeed Mr. Allen. **Donald C. Lott**, board chairman, becomes president; and **John F. Lott**, secretary.

Studebaker - Packard Corp., Detroit, elected **William H. Graves** vice president and director of engineering for both lines of cars. He is succeeded as chief engineer of the Packard division by **Herbert L. Misch. John D. Gordon** was made director of manufacturing engineering; and **Robert P. Laughna**, director of purchasing and production control for the corporation.

Paul McVicker was made manager, metallurgical department, **Electro Metallurgical Co.**, a division of Union Carbide & Carbon Corp. He continues as technical director of operations, with headquarters at Niagara Falls, N. Y.

Theodore J. Zeller was elected vice president of operations for **Mack Trucks Inc.** Formerly chief engineer, he continues headquarters at the Allentown, Pa., assembly plant.

Aloysius M. Tullo was made general manager of the newly established Harrison Division, **Worthington Corp.**, Harrison, N. J.

F. L. Blodgett, assistant general sales manager, was promoted to general sales manager of **Alloy Rods Co.**, York, Pa.

Philip H. Rollings was appointed division purchasing agent for **Blaw-Knox Equipment Division**, Blaw-Knox Co., Pittsburgh. He has been acting division purchasing agent for some months.

W. J. Woodruff, manager of **Kawneer Co.'s** Lexington, Ky., plant, was transferred to Niles, Mich., as works manager of the architectural products division. He continues in charge of the Lexington plant. **Robert B. Diehl**, manager of engineering, assumes additional duties as assistant plant manager and director of purchasing.

Herman E. Bakken, assistant general manager, was promoted to general manager of **Aluminum Co. of America's** refining division, Pittsburgh. He succeeds **A. B. Williams**, retired.

Nelson M. McGuire was made assistant to the vice president-sales. **American Manganese Steel Division**, American Brake Shoe Co., New York.

Edward V. Chevalier Jr. was promoted to manager of the Seattle branch of **Gerrard Steel Strapping Division**, U. S. Steel Corp. He succeeds **Edward W. Williams**, retired.

Pittsburgh-Des Moines Steel Co., Pittsburgh, named **C. R. Ford** sales manager, eastern district, with headquarters in Newark, N. J. He succeeds his brother, **H. W. Ford. J. S. Marriott** was made manager of structural sales for the Midwest division, with headquarters in Des Moines, Iowa. He succeeds the late **G. R. Van Hyning Jr. James Phillips III** transfers to the eastern district sales office from Pittsburgh.

Bert L. Snell was made vice president of **Luria Construction Corp.**, Bethlehem, Pa. For the last few years he has been assistant general sales manager, Luria Engineering Co.

H. K. Ferguson Co., Cleveland, appointed **Robert L. Cashen** vice president and eastern district manager. He succeeds **W. N. Thompson**, recently elected president.

Robert J. Greenebaum was made sales manager, **Inland Steel Container Co.**, Chicago, to succeed **John H. Strome**, now an assistant manager of sales in the Chicago district office of Inland Steel Co. Other appointments in the container division include: **Richard S. Reichmann**, named to succeed Mr. Greenebaum as manager of the Chicago manufacturing plant; **Richard E. Mungovan**, made Cincinnati district manager; and

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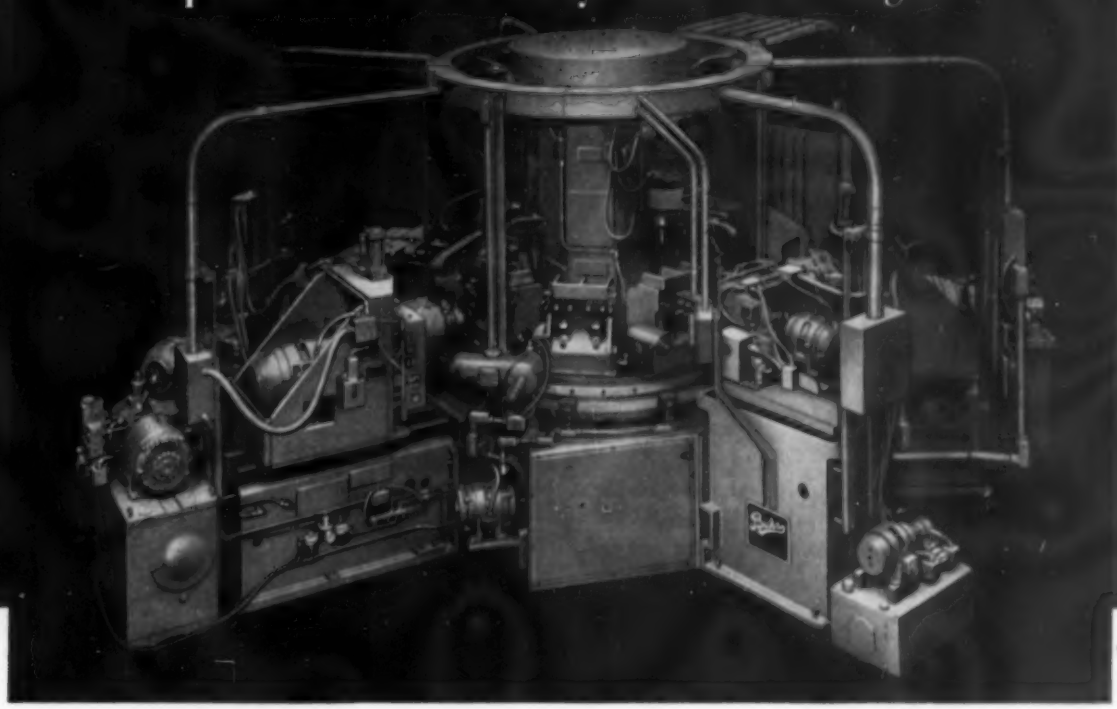
Buhr ECONOMATION

Mills, core-drills, drills, semi-finish bores, chamfers and taps 288 master-brake cylinders an hour gross!



Rough castings are loaded in pairs in this 10-way 7-station hydraulic-feed center-column Machine.

Equipped with 72"-diameter 7-position automatic power-driven heavy-duty index table, complete with two shot bolts.

For extreme ease of servicing and maintenance, automatic indexing unit slides out *without removing table.* This is done simply by detaching cover on front of Machine.

Other features of Machine include automatic hold-down clamp at rough-and-finish milling station, automatic rotating chip conveyor, power clamping and automatic lubrication.

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Solidly Engineered • Precision Built • for World's Leading Manufacturers

Thomas M. Dwyer, who in addition to plant manager in New Orleans, assumes former duties of Mr. Mungovan as sales manager.

J. A. Zurn Mfg. Co., Erie, Pa., appointed **Edward J. Donn** manager of sales promotion.

Charles D. Allis was named general sales manager for **McCulloch Motors Corp.,** Los Angeles.

Dan Dickman was made chief engineer for **Glass-Solder Engineering,** Pasadena, Calif.

Ralph J. Berlin was named executive assistant to the president of **Mills Engineering Co.,** Ventura, Calif.

B. J. Milleville was made chief engineer, **Edward Valves Inc.,** East Chicago, Ind., subsidiary of Rockwell Mfg. Co. He succeeds **David MacGregor,** works manager, who also had duties of chief engineer.

Frank Romanoff was made technical director of research and production processing at both the Chicago and Bethlehem, Pa., plants of **Apollo Metal Works.**

Lawrence W. Farrell was made assistant to the vice president, **Ford Instrument Co.,** division of Sperry Corp., Long Island City, N. Y. He previously held positions with E. G. Staude Mfg. Co., another division of Sperry.

Richard Foster was made district manager of the new district sales office opened in Atlanta by **Clark Bros. Co.,** Olean, N. Y.

Industrial Finishes Co. Inc., Philadelphia, elected **John F. Howe** vice president-sales.

WILLIAM W. LAMB
. . . Precision Metalsmiths sales mgr.

H. A. WILLIAMS
. . . Eaton Mfg. director-purchases

William W. Lamb was appointed sales manager, **Precision Metalsmiths Inc.,** Cleveland, to succeed **R. W. Devans,** who, as vice president and treasurer, will assume other duties. Well known in foundry circles, Mr. Lamb helped form Ohio Magnesium Castings Co. and served as its vice president and general manager.

W. M. Stark was elected commercial vice president, **Federal Pacific Electric Co.,** and, in addition, continues as manager, central sales region. His offices are in St. Louis.

Argus Leidy, vice president, was named executive head of **Globe Hoist Co.'s** industrial lift and elevator divisions, Philadelphia.

Clayton L. Davis was made technical service director of **Universal Atlas Cement Co.,** New York, U. S. Steel Corp. subsidiary. He succeeds the late **Earl R. Bryant.**

H. A. Williams was appointed director of purchases, **Eaton Mfg. Co.,** Cleveland. He succeeds **Vincent Cada,** who retires as manager of purchases on Mar. 1. Mr. Williams, for the last few years, has been general plant controller.

Russell J. Geitman was appointed chief engineer for **Link-Belt Co.'s** San Francisco plant.

Martin C. Falk was made assistant chief engineer of Copperweld Steel Co.'s **Warren Steel Division,** Warren, O.

Robert C. Williams was made vice president and director of contracts for **Precision Gears & Products Inc.,** Paterson, N. J.

James Adams Jr. was made chief engineer, research and product design, **Manhattan Rubber Division,** Raybestos-Manhattan Inc., New York.

OBITUARIES . . .

Henry Hardenbergh, 72, chairman of **New Jersey Zinc Co.,** New York, died Feb. 9.

W. E. Cross, 68, president of three industrial hardware concerns in Middletown, N. Y.—**Clemson Bros. Inc., Victor Saw Works Inc.** and **Napier Saw Works Inc.,** died Jan. 29.

Theodore Swann, 68, credited with having been the first in this country to successfully produce ferromanganese in an electric furnace, died in Birmingham Feb. 6. He formed the Southern Manganese Corp. in 1917.

William H. Scott, 64, owner of **Scott Pump Co.,** Rochester, N. Y., died Jan. 31.

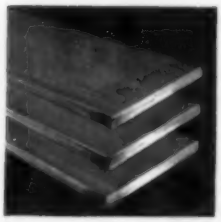
Fred K. Taylor, 69, a director and former vice president of **Taylor Instrument Cos.,** died Feb. 2.

John M. Gillard, 47, sales manager, wire and wire products, **Detroit Steel Corp.,** Detroit, died Feb. 4.

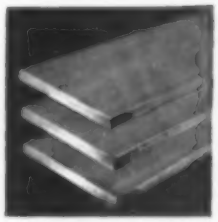
Mark Jacobson, 61, partner in the firm of **Mark & Harry Jacobson,** Detroit, died Jan. 30.

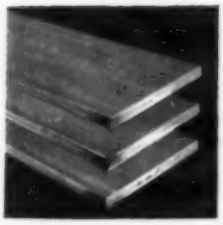
James C. Vosburgh, 62, Washington office manager of **Chicago Bridge & Iron Co.,** died Feb. 4.

J. H. Shields, 54, assistant marine sales manager at the **Cooper-Bessemer Corp.,** Mt. Vernon, O., died recently.



"an infinite capacity for taking pains"





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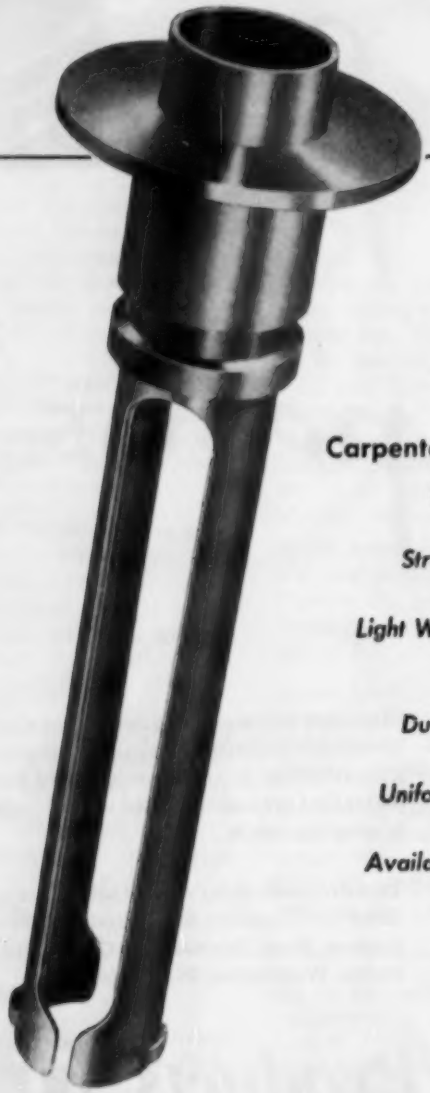
Sanitation's A Cinch with *Carpenter* Stainless Tubing for Parts or Process Lines



For example: The filler tubes for ½ gallon milk bottles must be of such a quality that the manufacturer can polish both I.D. and O.D. to the equivalent of a sanitary finish. That's why he specifies Carpenter Stainless Tubing.

Carpenter Stainless Is First Choice For:

Finish There are never any pits, checks or scratches when you buy polished Carpenter Stainless Tubing.

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Ductility Carpenter Stainless is easy to fabricate because tempers are "as specified".

Uniformity Carpenter customers depend on the uniformity of Carpenter quality—length-to-length, order-to-order.

Availability There is a Carpenter Distributor with adequate warehouse stocks as close as your telephone. He is ready, willing and able to give you any engineering or design help you need. When you call Carpenter, "One Call Does It All".

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New Technical Bulletin on Fabrication Data for Carpenter Stainless Tubing and Pipe now available. Send for free copy.

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Forms Aluminum Dept.

Federated Metals unifies nationwide aluminum operations under Allan Nichamin

KEEPING PACE with the dynamic growth of aluminum in industry, American Smelting & Refining Co.'s Federated Metals Division, New York, has established a national aluminum department. The announcement is made by E. L. Newhouse Jr., vice president.

The organizational change unifies Federated's nationwide aluminum operations, affording aluminum casting alloy consumers the advantage of maximum service from a major supplier. The move facilitates the division's program for establishing a degree of marketing and product uniformity aimed at improving continuity and reliability of aluminum supplies and technical assistance.

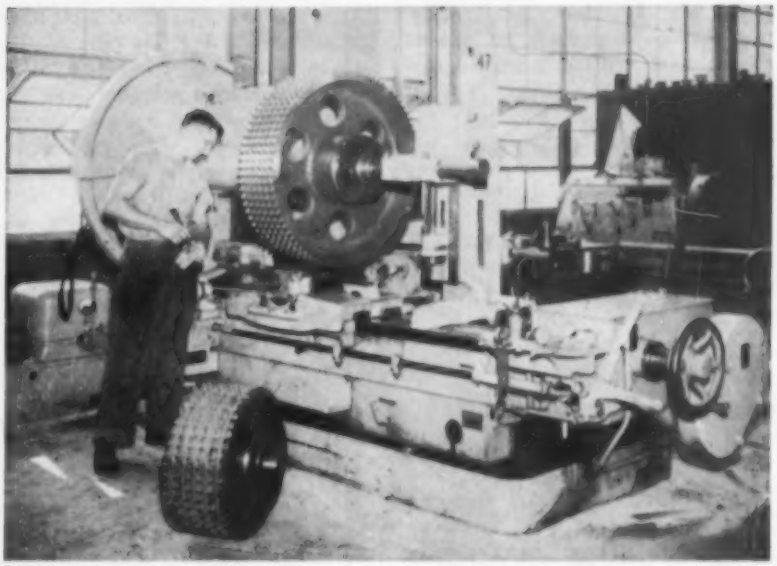
Allan Nichamin, formerly manager of Federated's aluminum producing plant in Detroit, will manage the new aluminum department from his Detroit office. Donald L. LaVelle, formerly research metallurgist in American Smelting's central research laboratory, has been appointed assistant manager of the aluminum department.

Luria Opens Montreal Office

Luria Bros. & Co. Inc., Philadelphia, a leading iron and steel scrap firm, opened its office at 5675 Cote St. Paul Rd., Montreal, Que. The district co-managers are Moses Deitcher and Saul Josephson.

Kaiser To Start Building Soon

Construction work on Kaiser Aluminum & Chemical Corp.'s multimillion-dollar aluminum rolling mill near Ravenswood, W. Va., is being started this month. According to present schedules, work will be completed and the plant in operation by July 15, 1956. Rated annual capacity of aluminum sheet and foil products is 72 million lb. Specifications on major and auxiliary equipment for the plant are being made available to suppliers on schedule. Delivery and installation will start early in 1956. The main building will contain more than 400,000 sq ft of space and will be completed late in December.



Link-Belt Fabricates Pair of Large Sprocket Wheels

This large sprocket wheel, being cut at Link-Belt Co.'s plant in Houston, is for use with sextuple width, 1½-in. pitch, roller chain. It has 85 teeth; outside diameter is 41 in. Companion sprocket (on floor) has 32 teeth. They will accommodate drive requirements of a large slush pump application in an oil field

Will Enlarge Research Center

Diamond Alkali Co., Cleveland, is modernizing and enlarging certain key facilities at its Painesville, O., Research Center. Purpose of the $200,000 project is to meet expanding needs of the firm's fundamental and applied research programs.

Manistee Completes Project

With construction of an extension to its foundry, Manistee Iron Works, Manistee, Mich., nears completion of its expansion and modernization program. The extension adds 2500 sq ft to the foundry and houses new sand handling and casting cleaning equipment. It also provides space for the installation of laboratories for controlling quality of both core and molding sand, as well as metals being cast. Other steps in the foundry modernization program have included: The purchase of new and renovation of old pattern storage buildings and systems; modernization of the patternmaking shop. The project was started over a year ago following purchase of the facilities by Michigan Tool Co., Detroit. It has geared the northern Michigan firm for higher and more efficient production of high quality machine tool castings, while continuing Manistee's line of pumps and valves.

Republic Expands Canton Plant

Republic Steel Corp., Cleveland, is increasing the productive capacity of its kitchen cabinet plant in Canton, O., by one-third. Facilities will be extensively rearranged to improve straight flow production lines and additional equipment wil be installed at Berger Mfg. Division's plant No. 2. New facilities will include a fourth conveyor line, automatic welders, bake oven, sanding booth and a 75-ton, 6-ft forming brake. The project is expected to be completed by Apr. 1.

Lehigh Foundries Renamed

Lehigh Foundries Inc., Easton, Pa., changed its name to Lehigh Inc. The firm produces: Castings in malleable iron, gray iron and steel; a complete line of air control equipment (cylinders, air motors, valves, air cylinder hoists) and units for use on metalworking and other equipment; and vending

machines. The firm's Lehigh Mfg. Co. Division, Lancaster, Pa., makes commercial refrigeration equipment and systems.

Beryllium Corp. Opens Branch

Beryllium Corp., Reading, Pa., opened a sales office at 1915 S. Sheperd, Houston. Ross E. Schofield, district representative in charge, will offer sales engineering services to users of the firm's beryllium alloys.

Equipment Firms Consolidate

Gardner-Denver Co., Quincy, Ill., and Keller Tool Co., Grand Haven, Mich., have consolidated. Gardner-Denver makes air compressors, pumps, rock drills and related equipment. Keller Tool makes pneumatic tools used in high production assembly plants. Physical transfer of all the assets of Keller Tool became effective Jan. 31.

J&L Opens Lancaster Plant

Jones & Laughlin Steel Corp., Pittsburgh, formally opened its combination warehouse and Container Division plant in Lancaster, Pa. The building, located on Steel Way, between the Manheim and Fruitville pikes, has more than 100,000 sq ft of floor space. The Container Division plant is manufacturing steel shipping pails, lacquer-lined and painted or lithographed.

Weirton Steel Building Plant

A sintering plant and wet flue dust reclamation unit is being constructed at Weirton Steel Co., Weirton, W. Va. The plant, replacing the present sintering plant, will have a rated capacity of 2000 tons of sinter per day. As part of the plant, a flue dust recovery system will be installed for the clarification of blast furnace gas-washer water presently being discharged into the Ohio river. Weirton Steel is a division of National Steel Corp., Pittsburgh.

REPRESENTATIVES

Continental Screw Co., New Bedford, Mass., appointed Willard G. Hartman, St. Paul, as its representative in Minnesota, North Dakota and South Dakota.

Kaiser Aluminum & Chemical Corp., Oakland, Calif., appointed W. J. Bullock Inc., Fairfield, Ala., a distributor of its standard alloys aluminum ingot. Kaiser also appointed Fullerton Metals Co., Miami, Fla., a distributor for its industrial line of aluminum mill products, including sheet, plate, rod, bar, wire and extruded and industrial shapes. Fullerton Metals is a subsidiary of Fullerton Steel & Wire Co., a Kaiser Aluminum distributor in Chicago. In addition to the Kaiser line, Fullerton plans to stock brass screw machine stock, sheet and coil; carbon steel sheet; cold-finished bars; galvanized and stainless steel.

Uniworld Research Corp. of America, Cleveland, appointed Eastern Brass & Copper Co., New York, as distributor of a group of new electro-steel alloys which may play an important part in the manufacture of atomic energy generating equipment and jet propulsion apparatus. This group of steels also finds application in the chemical industry, turbocompressors, gas and steam turbines, gasoline cracking plants, pumps, heat exchangers and in the food processing industry. The steels are available in sheet, rod, wire and tubing, as well as in castings and forgings.

Electric Regulator Corp., Norwalk, Conn., appointed Radio-Technical Sales Co., Kansas City, Mo., as sales representative in Missouri, Kansas, Nebraska, Iowa.

Parker Appliance Co., Cleveland, appointed Vincent Brass & Copper Co., Minneapolis, distributor of its Hoze-lok fittings and hydraulic hose assemblies.

Columbia Tool Steel Co., Chicago Heights, Ill., appointed W. H. Schulz Co. Inc., St. Paul, as its representative in that territory.

ANNIVERSARIES

Thompson Grinder Co., Springfield, O., is celebrating the 50th anniversary of its founding this year. This manufacturer of machine tools is under the leadership of W. G. Baldenhofer, president; Ralph Baldenhofer, vice president and treasurer; John C. Wilson, vice president in charge of sales and engineering; Mrs. Ruth Andrews, secretary; and Fred T. Wilson, assistant secretary.

NEW ADDRESSES

Kaiser Aluminum & Chemical Sales Inc., Oakland, Calif., moved its Cincinnati district sales office to 2330 Victory Parkway.

Worthington Corp., Harrison, N. J., manufacturer of pumps, compressors, air conditioning equipment and allied power plant equipment, moved its Detroit district office to 13305 Puritan Ave. C. S. Wentworth is central sales manager.

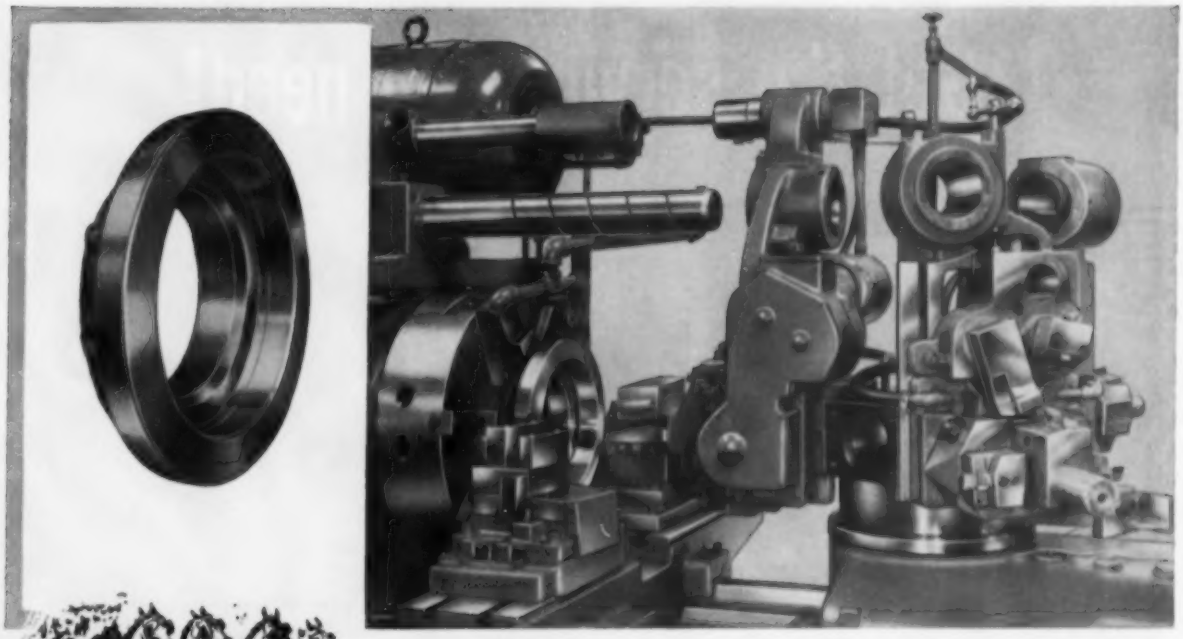
New York city offices of **Spang-Chalfant Division, National Supply Co.**, Pittsburgh, manufacturer of steel pipe, have been moved to 45 Rockefeller Plaza.

Lukens Steel To Intensify Product Development

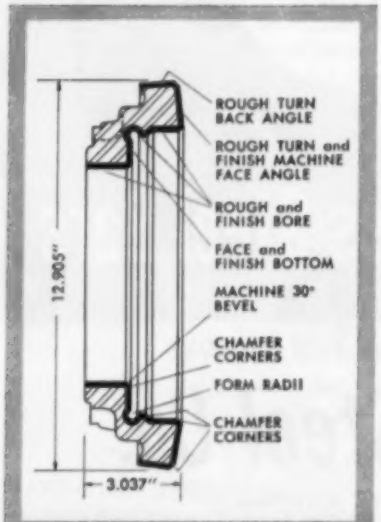
LUKENS STEEL CO., Coatesville, Pa., launching a 5-year expansion of its current markets, will intensify product development to include diversification outside the capital goods field. The company will commence the manufacture and marketing of end products and also enter markets foreign to Lukens' historical base.

Marketing and economic studies indicate for the next five years:

1. The construction industry will increase its use of steel plate by 20 per cent.
2. The electrical equipment industry will use 18 per cent more steel plate.
3. The industrial machinery and process equipment industry will increase steel plate demands by 30 per cent.



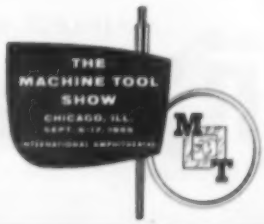
FORTY HORSES "pulled the team" that made this bevel gear blank



The Powerful 6DREL-40 Automatic Turret Lathe -- and **P&J** Tooling

Machining a forged-steel truck bevel gear blank — 14 distinct cuts with tungsten carbide tools in just 5.88 minutes (including chucking time) — takes a team with plenty of horses to pull it . . . A TEAM LIKE THE **P & J 6DREL-40 AUTOMATIC** (NOW WITH 40 HORSEPOWER), PLUS JOB-ENGINEERED **P & J TOOLING**. Here's the team to choose for doing your tough jobs faster . . . and at a lower per-unit cost!

If you're looking for real productive power, it will pay you to look at the 6DRE-40 and 6DREL-40 Automatic Turret Lathes. Write for informative booklet describing these Automatics. Ask for Bulletin No. 128 . . . or ask the P & J Tooling Engineer to submit recommendations based on your sample parts or prints.



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Quality Stainless Steel Bars

STAINLESS BILLETS FOR FORGING IN COMPLETE SIZE RANGES

Rotary Electric Steel Co.

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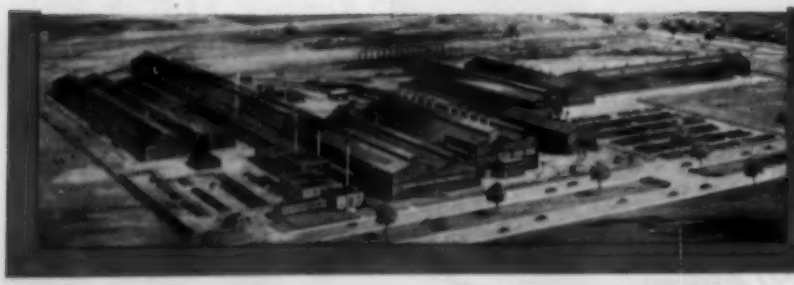


ALLOY and STAINLESS STEELS
BILLETS • SLABS
HOT ROLLED and
COLD FINISHED BARS

SALES OFFICES—Chicago • Cleveland • Newark, N. J. • Hartford, Conn.

SALES AGENTS—Indianapolis • Fayetteville, N. Y. • Houston, Texas

STEEL

February 21, 1955

Technical Outlook

LOWER PRICED ELECTRONICS—Printed circuitry, the boon to television manufacturers, has arrived on the industrial scene. General Electric is using it for the first time on control equipment panels for their Thy-mo-trol electronic adjustable speed drives. It means prices come down 20 per cent and the user gets more maintenance-free operation. New design is available in the ¾ to 1 hp and 1½ to 3 hp full wave ratings.

STEEL FOR PLASTICS— Predictions that the growth of the plastics industry will help metals, too, is borne out by news from Goodyear Aircraft in Akron. Five heavy presses ranging in size from 100 to 700 tons have been installed for production of large reinforced plastic parts. Then there's the supplemental equipment which includes more metal equipment . . . preforming machines, ovens, mixers, grinders, etc.

DEEP FREEZE—A pint-sized test chamber takes temperatures down to as low as minus 452° F. It's used to test metals for stress and strain. One reason for the tests at these extremes is that future aircraft may use fuels which are stored as liquefied gases in metal containers.

SANDWICH RECTIFIERS—Germanium officially joined the industrial rectifier family with announcement by GE of germanium sandwich rectifiers for the chemical, aluminum, steel and titanium industries. Their big advantage: Efficient conversion of alternating to direct current of high amperage and low voltage.

SEE-THROUGH TV— Is the end in sight for the funnel-shape TV tube? Willys Motors has developed a transparent tube consisting of flat plates. The Navy will mount it in an aircraft cockpit in the pilot's line of vision through the windshield. On it he'll receive pitch, roll and yaw information now conveyed by conventional instruments. A second screen mounted below it would give the pilot navigation and control data. He'd select information he wants by flipping a switch. It's part of the Navy's program to take the complexity out of cockpit instruments.

ZIRCONIA— Add fused stabilized zirconia to your list of materials for the high temperature age. It combines great refractoriness, low thermal conductivity and inertness to attack by many metals. Refractory zirconia will withstand temperatures to 2600°C and has three times the insulating quality of alumina and magnesia.

TITANIUM-BASE ALLOYS— A couple of newcomers to the growing list of titanium alloys have promising futures. Described in the annual report of the Armour Research Foundation, one can be heat treated to tensile strengths in the 170,000 to 190,000 psi range and retains good impact strength at subzero temperatures. The other, a 36 per cent aluminum, titanium alloy shows splendid oxidation resistance at 1832°F. The alloy exhibits stress-rupture properties superior to X-40 and other "superalloys" on a strength-to-weight basis.

BEARINGS AND JETS—More bearings fail as jet engine speeds go up. Tip for improved design: Combination of an outer race riding cage with inner race guided rollers seems to give best performance because of oil flow characteristics minimizing oil churning and friction losses. Lubricant should have easy flow into, through and out of the bearing, says NACA.

Metalworking Outlook—p. 35 Market Outlook—p. 113

Stainless at Work

Stainless Overlays Combat Corrosion

By EDWARD W. HOPPER
Chemical Engineer
Crucible Steel Co. of America
Pittsburgh

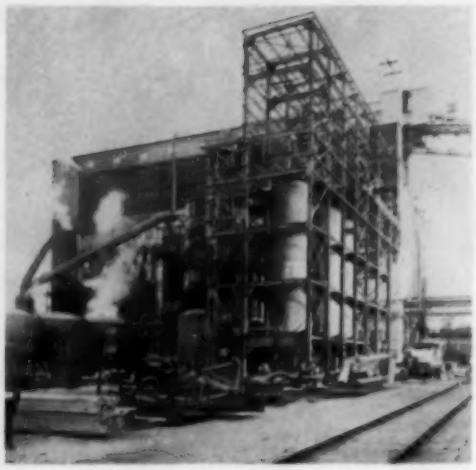


Fig. 1—Kraft digester installation at West Virginia Pulp & Paper Co., Charleston, S. C.

WELD METAL OVERLAYS of stainless steel are extending the service life of carbon steel Kraft digesters used by the pulp and paper industry. The overlays stop corrosion and erosion on areas thinned to the point where either the operating pressure must be reduced or the vessel condemned.

Kraft digesters are large pressure vessels in which the wood chips are cooked to remove the complex soluble chemical compounds which bind the cellulose fibers together. The cooking liquor is a solution containing caustic

Stainless Castings Guard Food Products

By E. A. SCHOEFER
Executive Vice President
Alloy Casting Institute
Mineola, N. Y.

Fig. 1—Machining collecting bowl of type CF-16F stainless for a milk packaging machine

MANUFACTURERS OF modern food processing equipment have a set of metallurgical problems all their own. In addition to satisfying mechanical requirements, such equipment must maintain quality and flavor, prevent contamination and comply with strict local, state and federal health regulations. Stainless alloys have provided an economical solution.

A few years ago food processing equipment was made of tinned or galvanized carbon steel and tinned bronze. Cleaning these coated metals with hot water, steam and strong chemicals, as well as mechanical brushing, attacked the

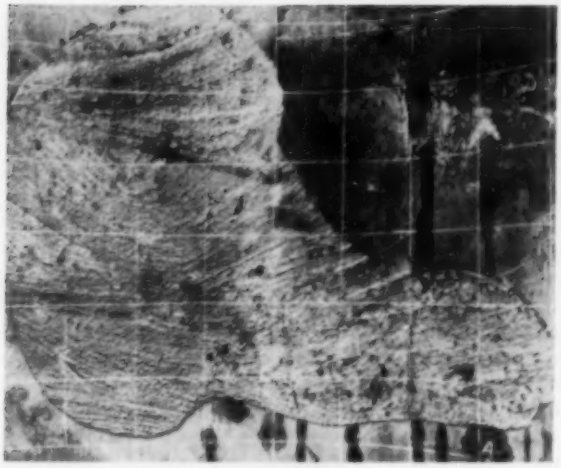


Fig. 2—Stainless weld overlay applied in 1952. The overlay shows no evidence of attack

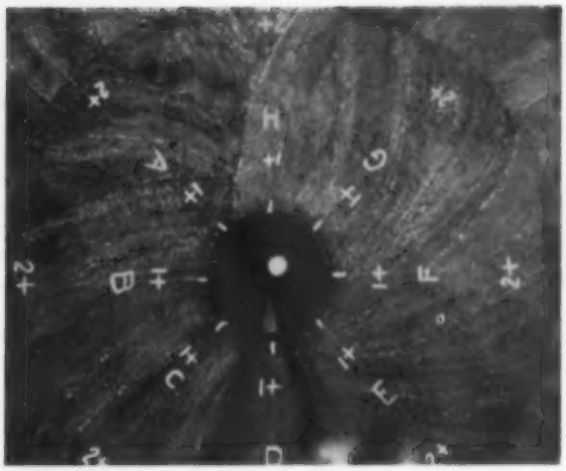


Fig. 3—Stainless weld overlay applied to the dome of a Kraft digester, a frequently attacked area

soda, sodium sulfide, sodium carbonate, and sodium sulfate. Actual composition varies from mill to mill. The digesters range in size up to 12 ft in diameter by 48 ft high with a wall thickness of 1 to 2 in. and operate up to 340° F with pressures to 130 psi. (Fig. 1.)

Material—Most of the digesters in service are carbon steel. ASTM A-285 firebox quality steel is generally used although some ASTM A-212 high tensile strength carbon-silicon firebox steel is employed. Service life averages 12 to 15 years. However, corrosive and erosive attack sometimes causes severe localized thinning, and in a few cases this has reduced life to as little as two years.

Location and type of attack varies greatly from mill to mill. In some it is largely confined to the dome and upper portions of

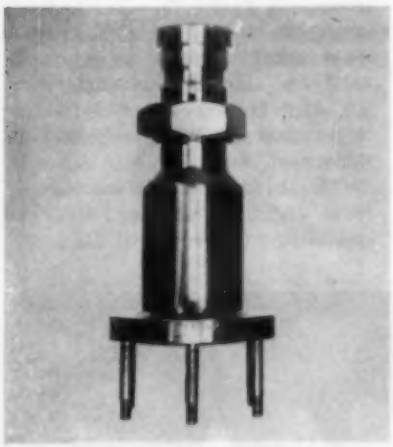


Fig. 2—Flow meter body of CF-16F stainless for an ice cream making machine

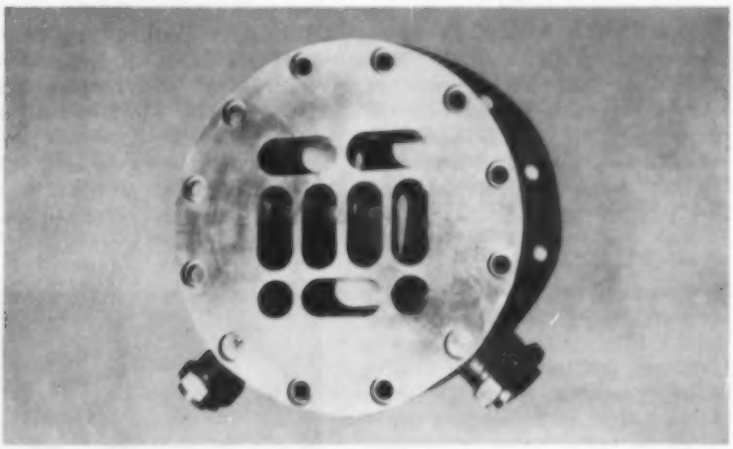


Fig. 3—Heat exchanger of CF-20 cast stainless for use in dairy operations such as pasturizing

coatings and increased the danger of copper and iron destroying the vitamin C content of foods, such as citrus juices, or impairing the flavor of dairy products.

Stainless Serves—Stainless alloys, on the other hand, do not affect the appearance, taste or nutritional properties of food. They are resistant to most cleaning chemicals, hot water, live steam and mechanical brushing and scouring. The finish of stainless equipment is permanent and does not require repolishing. Castings can be designed to eliminate nooks that would trap food particles.

The cast austenitic or 18-8 chromium-nickel types frequently are chosen for their strength, ductility and good fabricating qualities. Shown in the table are five types, identified by Alloy Casting Institute symbols, commonly used for food processing (p. 77).

The general-purpose CF-8 and

OVERLAYS

the side walls of the vessel, above the liquor level. In others, the thinning takes place on the lower side walls. Type of attack also ranges from large uniformly thinned areas to deep pits and grooves.

Cause — Crucible Steel Co. of America's corrosion laboratory has been actively concerned with the problem. It appears from Crucible's studies that carbon steel digesters could not be used in Kraft digester service if it were not for formation of a thin protective film.

This film can be eroded, washed or rubbed away. Studies have shown as much as 300 millivolts potential difference between the filmed and unfilmed areas, with the unfilmed area anodic and subject to attack. This condition can account for much of the metal loss. Breaks in the film appear to be self-healing where not subject to erosion.

Critically affected companies sought some method for protecting the thinned areas of seriously attacked digesters until replacements could be secured. Crucible's engineers suggested that the critical locations be overlaid with stainless steel weld metal to stop further attack.

Results—Tests showed that a stainless type 310 overlay properly applied did not reduce the physical properties of the A-212 Grade A plate used for the digesters. Tensile strength, yield point and elongation all exceeded minimum requirements. Bend tests with the stainless on the outside and under tension made the full 180 degree bend without cracking. Stainless type 308 overlay failed to meet the physical test requirements.

Corrosion tests were run to determine whether attack might take place in the carbon steel adjacent to the weld deposits. They showed no evidence of such corrosion, using cooking liquor as the testing medium.

Trial—Type 310 overlays were tried out on digesters considered almost ready for replacement 45 months ago. They are still in service and operating at full design pressure. Since then, overlay has been installed on digesters in 12 plants. (Fig. 2.)

Some of the overlaid areas are almost 250 sq ft in size. There has been little or no evidence of attack on the stainless and only one case of accelerated attack on the adjacent carbon steel. In this case it has been recommended that

CASTINGS

CF-20 alloys are resistant to acid media (which are strongly oxidizing) and to weak and strong alkaline solutions. Addition of molybdenum to the alloy, as in the CF-8M and CF-12M types, improves resistance to reducing media and various salts. Where extensive machining is required, the selenium-containing CF-16F grade is often used. How these alloys are employed is illustrated by the following examples from the food industry.

Milk Products—The dairy industry was one of the first branches of the food industry to replace coated metals with stainless. Cleanliness is perhaps a greater problem in processing dairy products than for other foods. Most milk handling equipment is taken apart after each run—a minimum of once a day—and is cleaned with water, steam, detergents and at least one sterilizing compound, such as sodium hypochlorite.

Fully automatic paper-packaging equipment for fresh milk plants uses stainless extensively. It is considered especially necessary for the filling units, which come in contact with the milk products being packaged.

Carton Filling—One of the most important parts of an automatic milk packaging machine, built by American Can Co., Newark, N. J., is a large cast stainless bowl to collect milk prior to the filling operation. The casting, 14½-in. deep and 45¾-in. in diameter, weighs about 450 lb after machining. Type CF-16F, the free machining grade, was chosen because several machining operations (Fig. 1) including milling, turning, drilling and boring are performed on the bowl casting.

Ice Cream—To maintain purity and flavor, an ice cream producer, Abbott Dairies of Philadelphia, uses all-stainless type flowrator meters (Fig. 3) made by the Fischer & Porter Co. The body of the meter (Fig. 2) is made of a high alloy casting—usually CF-16F for improved machinability, although other types of cast stainless, such as CF-8, or CF-8M, are also used.

The tapered inside surface of this stainless casting forms the metering tube section of the meter.

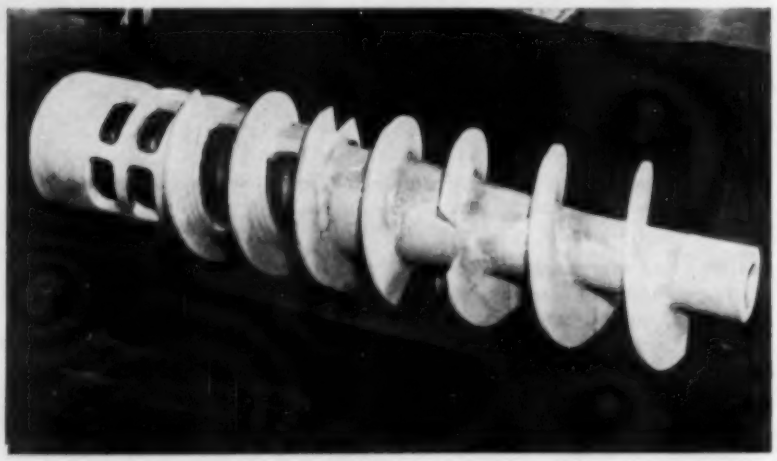


Fig. 4—Cast extractor screw of CF-12M stainless for pressing pineapple juice

lay be extended to cover these areas.

Technique — Digesters are checked for thickness by "Audigage" and the thinned areas ready for overlay outlined with chalk, using a rounded contour to eliminate sharp angles. The area is extended 2 to 4 in. all around to insure overlaying all areas subject to excessive attack. The entire digester is washed down, allowed to dry and the areas with scale adhering cleaned off.

The areas on side walls are then enclosed with rapidly applied perimeter beads. Several of these are applied on the shoulder of the previous beads. On large areas, the area is divided into sections by dividing beads angled downward at an angle of about 45 degrees to the vertical. Filler beads then are started, running from the shoulder of one bead and finishing on the other shoulder.

These beads are applied horizontally or with a downward angle of about 2 inches drop to the foot. Each succeeding bead is laid in on the shoulder of the preceding one, lending support to the molten weld metal. It gives a shingling effect, covering the thinnest and most diluted portion of the preceding bead. One pass is utilized in the overlay and an attempt is made to hold the weld deposit to 0.100 inch to 0.125 inch in thickness.

Dome and Cone—Somewhat comparable procedures have been worked out for overlaying the dome and cone sections. (Fig. 3.) These do not offer serious problems except for the position of welding. Type 310 lime coated rod has been employed in sizes ranging from $\frac{1}{8}$ to $\frac{5}{32}$-in., with the work negative.

The overlay protection has proved so satisfactory that some carbon steel digesters have been fabricated with a stainless steel overlay covering that portion most subject to attack.

Crucible emphasizes that the stainless overlay is simply a means for stopping erosion and corrosion and extending the service life of the vessel. The method is not recommended for building up digesters thinned beyond the corrosion allowance. Although the principal uses so far have been in digester service, stainless overlays are being successfully applied to blow valves, wear plates and targets, screw conveyors, agitators and propellers and steam turbines.

Stainless at Work

Stud bolts are screwed into the flange and then silver-soldered in place. The lower section, including the union, is a cast stainless unit.

Heat Exchangers — Elevated temperatures of dairy processing operations, such as pasteurization, increase the danger of corrosion and contamination. Cast stainless alloys are often employed in the construction of heat exchangers for this field. A typical example, shown in Fig. 3, is a 150 lb, 24-in. diameter heat exchanger head made of type CF-20 cast stainless, which has replaced nickel-copper alloys in this application.

Fruit Juices — Fruit juice processing operators conform closely to dairy industry standards. Strong alkaline detergent solutions are pumped through piping and equipment following use to remove organic deposits. Equipment is designed for easy cleaning. Molybdenum-containing cast alloys CF-8M and CF-12M are used because of their excellent resistance to organic acids and cleaning chemicals.

A situation involving both corrosion and abrasion is illustrated in Fig. 4. This extractor screw, cast of type CF-12M alloy, is 6 ft long and weighs 1000 lb. In operation the screw turns about 5 rpm and ground pineapple skins are introduced through a housing at the small end. While traveling along the screw, highly acid pineapple juice is pressed from the mash passing out through a cylindrical screen and also passing in through the walls of the screw to be drained at the end.

Stainless Casting Alloys Popular in the Food Industry

ACI* cast alloy designation	Wrought alloy type †	Composition by percentage—Balance Fe							
		C max.	Mn max.	Si max.	P max.	S max.	Cr	Ni	Other elements
CF-8	304	0.08	1.50	2.00	0.04	0.04	18-21	8-11	
CF-20	302	0.20	1.50	2.00	0.04	0.04	18-21	8-11	
CF-8M	316	0.08	1.50	1.50	0.04	0.04	18-21	9-12	Mo 2.0-3.0
CF-12M	316	0.12	1.50	1.50	0.04	0.04	18-21	9-12	Mo 2.0-3.0
CF-16F	303	0.16	1.50	2.00	0.17	0.04	18-21	9-12	Mo 1.5 max., Se 0.20-0.35

*Alloy Casting Institute.
†Approximate corresponding wrought type. Wrought and cast composition ranges are not exactly the same.

Carbon steel billets roll through glass powder to open . . .

New Vistas for Extruded Shapes

HOT STEEL is flowing like tooth paste in a new plant at Pittsburgh. The metal is being formed into shapes which will crop fabricating costs on products ranging from adding machines to farm tractors.

Jones & Laughlin Steel Corp. sees a bright future for the solid carbon steel sections coming from its new $1,260,000 hot extrusion plant.

Main production will be complex sections that cannot be rolled, with some rollable special sections for which rolling is costly. Because the extruded sections can be made cheaply enough in small quantities, they will be custom-made for each order. To begin with, sections will range in weight from 1/3 to 12 lb

Induction furnace heats 50-lb billet to 2300° F in one minute. Glass powder on roll-out table lubricates die

T-shaped extrusion die made of tungsten-chrome hot worked steel. Die is shotblasted after each pass

Hot billet in press manipulator is pushed toward die container. Press ram forces steel through the die

per lineal foot, and up to 24 ft in length.

Savings—Close tolerance of the sections allows the fabricator to use most of the extruded sections practically as they are. Generally, all he has to do is cut the sections to length. He saves in machining, milling and profiling.

Parts now made from castings, forgings or machined, intricate shapes will be closely scrutinized as fabricators evaluate the extruded cold drawn sections.

"Our extrusions will be used in manufacture of parts for business machines, electrical equipment, agricultural machinery, automotive products, machine tools, air conditioning sets and ordnance material" predicts Howard M. Knobloch, Manager of J & L's cold finished products.

How They Are Made—Hot rolled rounds are cut to billets by an automatic cutoff machine. Size varies from 4 in. in diameter and 6 in. long to 5 in. in diameter and 20 in. long. Maximum weight is 110 lb.

Billets are heated in a helium atmosphere Magnethermic induction heating unit. The metal passes through a preheat coil, then through a high heat coil where it reaches 2300° F. The two heating steps take only 1 minute.

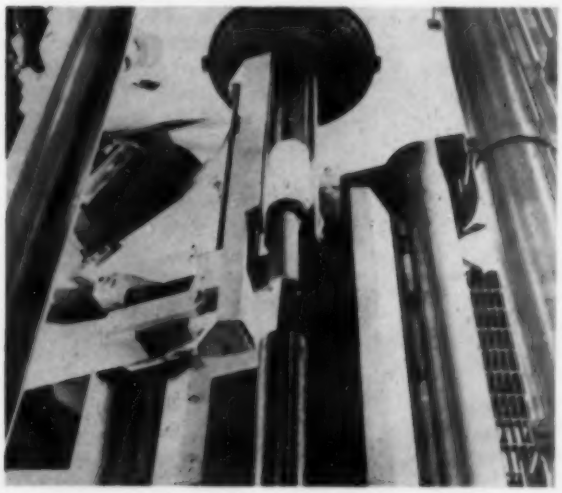
Lubricant—Coming from the heating unit the billets roll through powdered glass, a feature of the Ugine-Sejournet process. The glass lubricant prevents rapid wear and seizing of dies. After each hot extrusion, residual glass is shot blasted from the tungsten-chrome die.

An automatic loader picks up the glass coated billet and transfers it to the loading end of the extrusion press. The hydraulic ram positions it, then pushes it through the die.

The extruded bar goes automatically to the cooling bed.

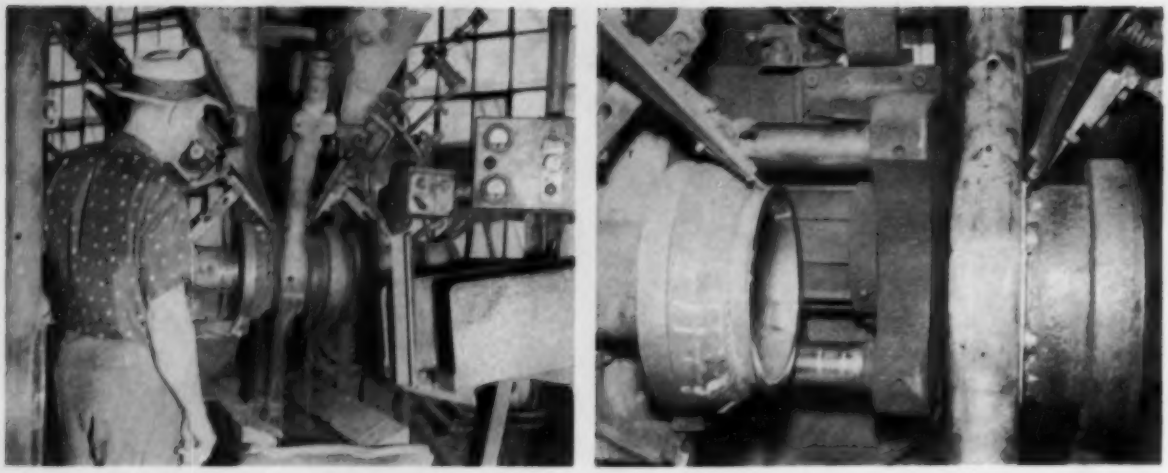
Finish—After cooling, the bar is stretcher-straightened and detwisted. A Wheelabrator shot blasting machine cleans off the glass and scale. To give close dimensional accuracy and fine finish, bars are cold drawn.

The extrusion press, built by Loewy-Hydropress Inc., New York, is hydraulic powered with a horizontal stroke. It can operate at pressures up to 1000 tons.



The glass coated billet is driven into billet container and then through die to give the extrusion its shape

Hot extruded section squirts from the horizontal press like toothpaste out of a tube. Only seconds are needed



Two submerged-arc heads work on either side of the axle housing as it turns in the revolving fixture. Closeup shows plunger about to position components

Two-Headed Welder Is Speed Demon

Quick loading and air clamping precede simultaneous production of two heads while the work is slowly rotated. It makes short work of axle housings at Chrysler

WELDING transmission housings may not be your problem, but Chrysler's solution—welding three parts in a single 55-second operation—promises savings in other jobs, too.

Rear axles for all cars and light trucks built by Chrysler Corp. divisions include the so-called banjo axle housings. At one side of each banjo is a $\frac{1}{2}$-in. stamped steel cap having a circular flange. This flange is arc welded around its periphery to the housing, which is formed from $\frac{5}{8}$-in. mild steel. To the opposite face of each banjo, a $\frac{5}{8}$-in. ring is similarly welded.

The Cycle—Both welds are made simultaneously by a pair of automatic submerged-arc heads fitted with special extensions to bring the electrode guide and flux to the desired location at approximately the 2 and 10 o'clock positions. Several duplicate machines do this automatic arc welding at Chrysler's Lynch Road plant.

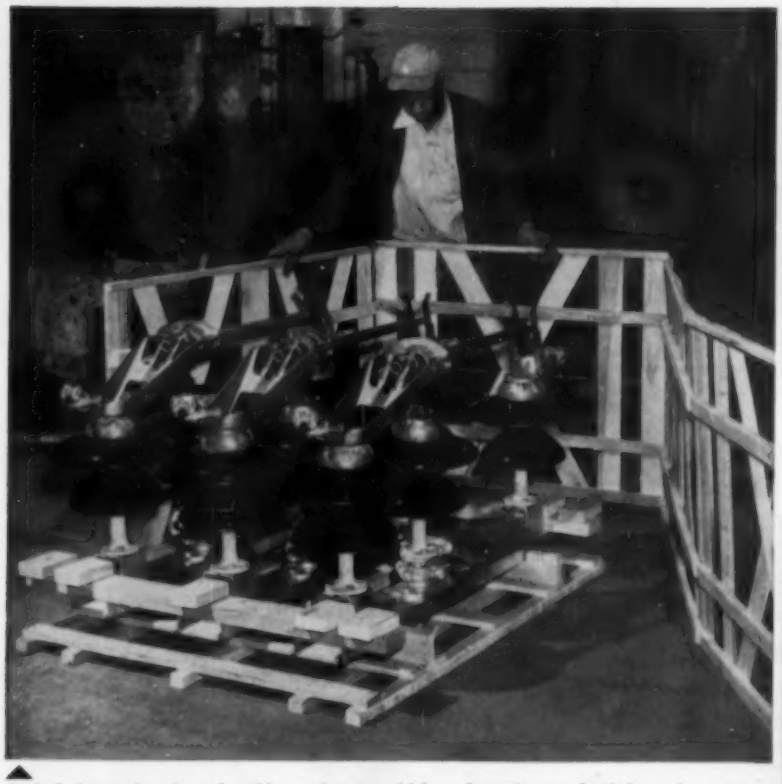
Axle housings reach the welding area via a monorail overhead chain conveyor. Two housing halves with reinforcement rings already projection welded are placed in a spindle recess, after which an air valve is tripped and the left spindle is moved by an air plunger to clamp the three components between the two spindles.

Automatic—After clamping is completed, welding wires start feeding to the work at the same time that flux is released over the work. As soon as the wires make contact, rotation and full power supply start and continue for one full turn plus a short overlap, completing the two weld beads.

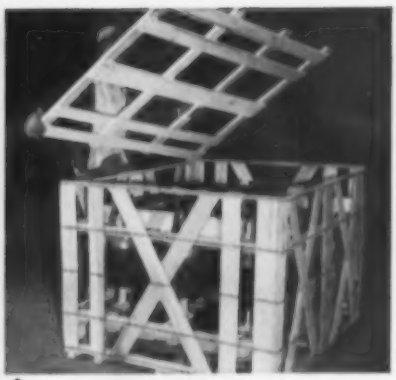
Then welding current (300 to 350 amps) is shut off, rotation and flux flow stop. Welding wires retract about 2 in. and the left head and spindle retract, unclamping the weldment which is removed by hand and returned to the conveyor. This complete cycle takes only about 55 seconds. Lincoln Electric Co. supplied both the heads and the generators.

Flux Recovery—Mild steel L-60 or equivalent electrode wire of $\frac{1}{8}$-in. diameter is fed to the welding heads automatically from reels mounted above the rear of each machine. Each head has its own supply of flux. A stream from each hopper is fed automatically to keep each arc covered.

Much of the flux drops from the welds into a screen-covered trough and is recovered for reuse. The flux that fuses is easily removed, dried, reground and put through a cleaning system that removes iron particles by magnetic separation and also draws off and discards very fine particles. Cleaned flux is mixed with 10 per cent new flux before being returned to the hoppers.



Switch is set in place by lift truck on pallet base specially designed to permit use of same crate for switches of two sizes. Wirebound mats wrap around easily, are secured in minutes.



Hold-down assembly, already in place here, goes on next. Then top is placed in position and nailed. All parts fit nicely, reinforcing each other for strength and easy assembly.

Although 106 pounds lighter than previous container, which was custom built for each switch, rugged engineered wirebound permits fork lift handling and stacking of 759-lb. gross weight units.

Prize-winning General-Engineered Wirebound Cuts Packing Time 85% for Delta Star

This wirebound crate won first award for excellence of design for Delta Star in the 1954 competition sponsored by the Society of Industrial Packaging and Material Handling Engineers, the 6th consecutive first for containers by General Box.

The change from a custom-built crate to a General wirebound design cut packaging time for high-voltage disconnect switches from 3½ hours to ½ hour and reduced gross shipping weight 106 pounds per unit—from 865 to 759 pounds. These important savings were accomplished by Delta Star Electric Division, H. K. Porter Company, Inc., of Pittsburgh.

Skilled labor was required to build the crates formerly used, while the precision-made parts of the new wirebound are put together by unskilled labor. A bit of ingenious design that makes the crate quickly adaptable to another size switch permits standardization. There is a further saving in the lower cost of the materials in the General wirebound, an improvement in the degree of protection afforded—thanks to engineered and tested design—and an improvement in the appearance of the container.

Specialized experience and design and testing facilities unmatched in the industry are applied to the creation of custom-designed, volume-produced containers by General Box. To find out how much better your packaging can be, have a General man call. No obligation. Consult your local directory, or write direct. Ask for your free copy of illustrated booklet "The General Box."

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Burdening the Blast Furnace

Substitution of 5 to 8 per cent of magnesium for lime in slag improves desulphurization of iron. Larger quantities cause increased coke rate, slag volumes and lower output

By M. W. LIGHTNER
Assistant Vice President
Research and Technology
United States Steel Corp.
Pittsburgh

EXCEPT for a few ores that contain enough lime to render them wholly or partially self-fluxing, such as occur in the Birmingham district and in parts of Europe, practically all ores contain gangue. To flux these acidic impurities, which occur in the coke as well as the ore, it is necessary to add to the burden a basic flux, generally limestone, sometimes supplemented by dolomite.

In its role as a flux for the silica and alumina the basic material is also required to form a slag which is not only fluid and will readily flow from the furnace but is of a basicity such as will hold a relatively high proportion of the sulphur contained in the coke.

Since the flux occupies only about 10 per cent of the furnace volume, its influence upon the permeability of the furnace burden is not usually considered of much significance. Nevertheless, larger pieces will have a tendency to roll to the center of the furnace and increase permeability in the same manner as ore and coke.

Composition Is Important—Probably the characteristic of most importance in the evaluation of a blast-furnace flux is its chemical composition. Naturally, a limestone with a high CaO content and low SiO_2 and S contents is the most desirable; likewise, if dolomite is used in the burden, one low in SiO_2 and S is desirable. In recent years the S and SiO_2 contents of available limestones have been higher than those used formerly, resulting in the use of more flux and greater slag volumes. Limestones and dolomites usually fall within the following composition ranges:

Table V—Effect of varying amounts of fluxing agents on operating conditions

Dolomite in flux burden, %	0	35	70	100
Limestone in flux burden, %	100	65	30	0
Average sulphur in iron	0.023	0.018	0.024	0.027
Ratio (S)/[S]	77	101	77	68
Average slag composition, %:				
MgO	1.2	6.1	15.6	21.2
CaO	50.2	46.6	37.5	32.6
SiO_2	36.3	35.2	35.2	35.0
Al_2O_3	10.8	10.9	10.5	9.9
Production, tons iron/day	838	855	846	806
Coke rate, lb/ton iron	1846	1822	1835	1906
Pounds flux/ton iron	881	948	971	1027

T. H. Kennedy and A. W. Thornton

BENVENUTO CELLINI
OF FLORENCE 1500-1571

Our knowledge of Cellini comes chiefly from his remarkable autobiography. No less masterful than his skill as an artist and craftsman in gold was his way with 16th century Italian beauties. Among the exquisite masterpieces of his art that survive in museums are jewel settings, candlesticks, caskets and a unique saltcellar he fabricated for Francis I.

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NUMBER TWO OF A SERIES

In *their* way, today's steelmakers are fully as fussy about flawlessness as was Cellini. The steel they produce, and the tools they use to produce it, must *both* be perfect. Basic Refractories provides steelmen with such tools.

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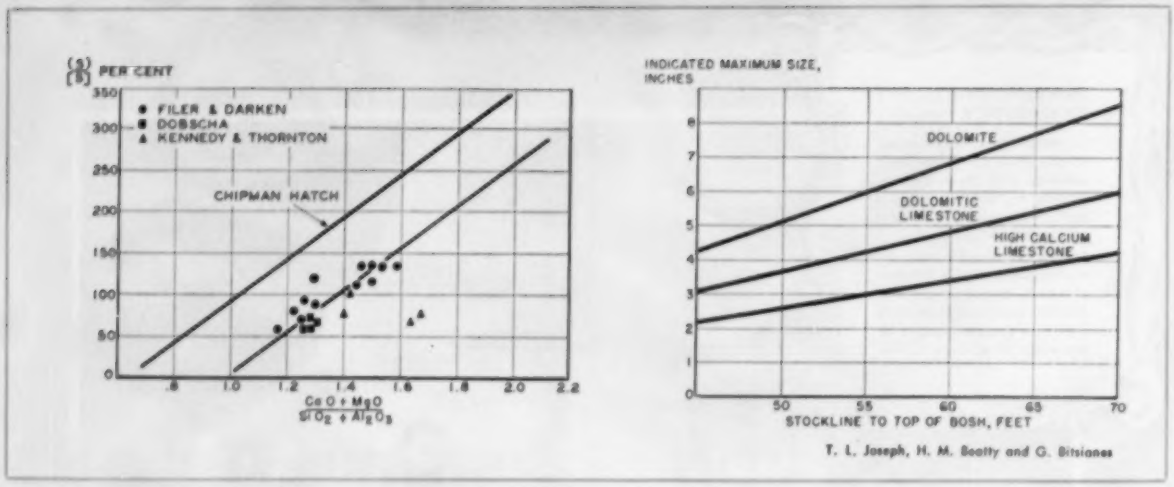

	Limestone	Dolomite
CaO, %	45.0 -55.0	30.0 -35.0
MgO, %	0.5 - 9.0	20.0 -23.0
SiO_2, %	0.25- 5.0	0.25- 2.0
S, %	0.02- 0.300	0.003-0.2

The role of MgO in the burden and its influence on slag-metal relationships has long been a matter for discussion and experimentation.

Thermodynamic calculations of the desulphurizing power of CaO and MgO are according to the following reactions:

$CaO + S \rightleftharpoons CaS + O$ $\quad \Delta F^\circ + 12{,}000$ cal

$MgO + S \rightleftharpoons MgS + O$ $\quad \Delta F^\circ + 34{,}000$ cal

The equilibrium constants of these reactions of 2912° F are:

$$K_{CaO} = \frac{a_{CaS} \cdot a_O}{a_{CaO} \cdot a_S} = 0.04$$

$$K_{MgO} = \frac{a_{MgS} \cdot a_O}{a_{MgO} \cdot a_S} = 1 \times 10^{-4}$$

Data Are Lacking—Exact data on the activities of oxides and sulphides in liquid slags are lacking, but from the equilibrium constants as shown for the above reactions, CaO is about 400 times stronger as a desulphurizer than MgO. The researcher would conclude that MgO is ineffective as a desulphurizer but does replace CaO as a basic oxide to flux SiO_2 and Al_2O_3.

It is believed, however, that the major role of MgO is in increasing slag fluidity, especially when hearth temperatures are lower, as when low-silicon iron is being made. It has been shown that the addition of 6 to 8 per cent MgO to blast-furnace slags increases fluidity over a wider temperature range. Thus, it is conceivable that MgO, even though it is not a strong desulphurizer thermodynamically, will aid desulphurization not only by neutralizing the acid constituents but also by increasing fluidity, so that particles of slag will come into more intimate contact with metal droplets to facilitate reactions.

Test Results—An interesting test to demonstrate the effect of varying amounts of MgO upon furnace operation was conducted at the National Works of National Tube Division. In this test, using 100 per cent Mesabi ore to produce acid-bessemer iron, the furnace was operated with varying percentages of limestone and dolomite and the effect upon the desulphurizing power of the slag, production rate, coke rate and other operating conditions was noted. The essential data are shown in Table V.

As a result of this work, it was concluded that, up to an optimum of somewhere between 5 and 8 per cent of magnesia in the slag, its substitution for lime improves the desulphurization of the iron. Increasing magnesia beyond this range results in a reduction of the sulphur-holding power of the slag, resulting in increased flux rate, increased coke rate, greater slag volumes and less production.

Equilibrium Conditions—In another investigation it was stated that the optimum MgO content of the slag probably is between 7 and 10 per cent. The relative effects on the bases CaO and MgO, and the acids SiO_2 and Al_2O_3, especially as the desulphurization reaction is concerned, has found many of the investigators weighing the constituents differently.

One reason for this is because the data in most cases have not represented equilibrium conditions. In yet another research, even with violent stirring and agitation, seven hours were required to attain slag-metal equilibrium. Their results are shown in Fig. 6.

It will be noted that the Filer and Darken data, which were obtained with less hold time than Hatch and Chipman used, show a lower ratio of (s)/[S] for a given basicity ratio.

Calcining Characteristics — The physical properties of the stone, such as its porosity, uniformity of size and rate of calcination, are important because they influence the rate at which CO_2 is released and the completeness of calcination before the stone reaches the bosh of the furnace. These properties of the stone, together with the time required for travel from the zone where calcination will occur at a rapid rate, determine the amount of CO_2 liberated at temperatures above which it may cause premature combustion of carbon above the tuyeres.

It has been concluded that calcination of stone is confined to a boundary plane which progresses from surface to the center at a definite rate; naturally, there is some overlapping between calcined and uncalcined areas.

Plotting Calcination — Another

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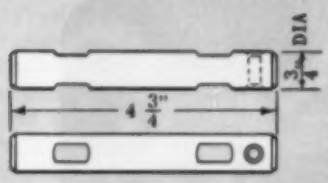
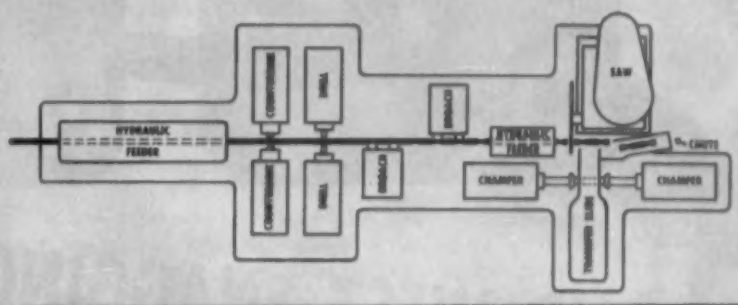
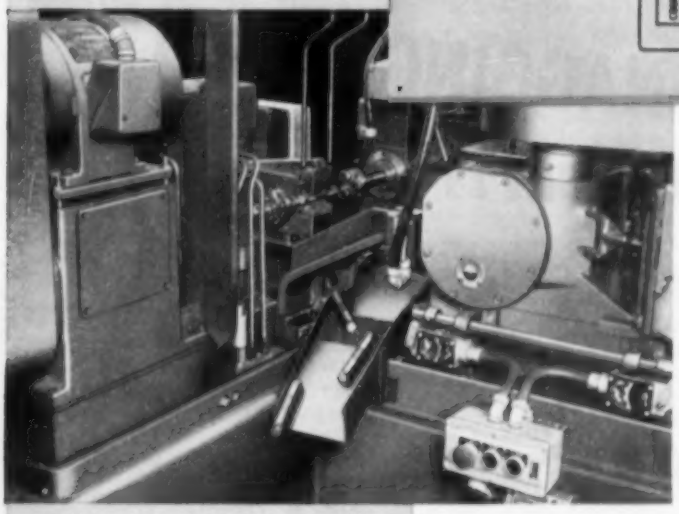


Part: Differential pinion shaft.

Operations: Countersink, drill, broach two sides, Triple-Chip cut off, and chamfer both ends.

HOW M & M DID IT BEST





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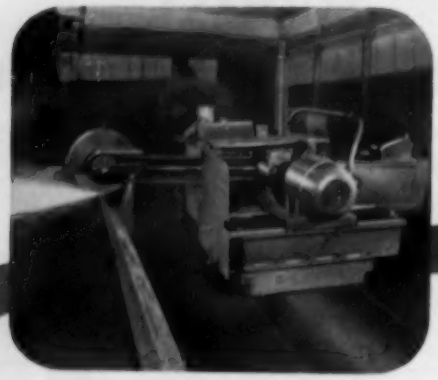

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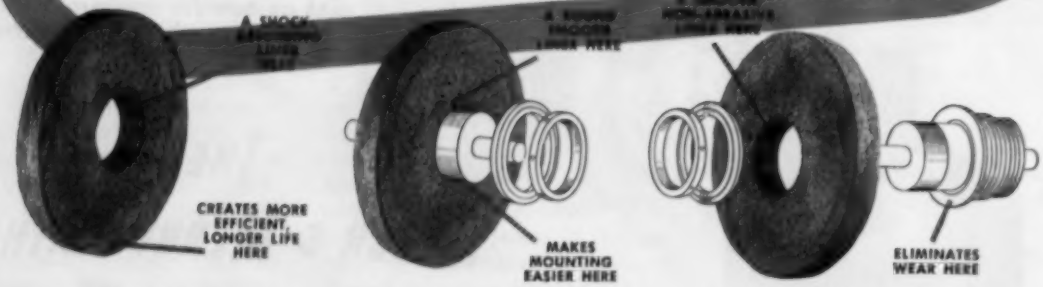

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investigation found that as the amount of $MgCO_3$ in the stone increases, the calcination rate increases. Thus dolomite calcines at the fastest rate, followed by high-magnesia limestone, which in turn calcines faster than high-calcium limestone. It also will be noted that the rates of calcination for all the stones are rather slow below 1652° F.

From data on the average rate of descent of the charge from the stockline to top of the bosh and the temperature gradient in the stock column, were calculated (Fig. 7) the maximum sizes of the various types of stone which it is permissible to use in a shaft of a given length so that the stone will be calcined before it reaches 1050° C. This is the temperature at which the solution reaction (consumption of carbon by reaction with CO_2) will progress rapidly.

In general, it has been found that the more porous stones are higher in magnesia and calcine more rapidly, but unless the material is porous, a high MgO content does not insure a high rate of calcination. The conclusion is that porosity is twice as effective as the quantity of magnesia in promoting calcination.

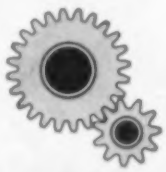
(Next week the author concludes with a discussion of total burden and its relationship to furnace efficiency.)

Metals, Alloys Structure

First published in 1936, *The Structure of Metals and Alloys*, by William Hume-Rothery and G. V. Raynor, has been revised. Parts dealing with solid solutions and intermediate phases in alloys have been extended. New sections have been written on ternary alloys and alloys of iron. The part dealing with imperfections in crystals has been extended to include a comprehensive account of the dislocation theory.

This edition is about three times larger than its predecessor. The text can be understood without a knowledge of higher mathematics or crystallographic notation.

Published by the Institute of Metals, 4 Grosvenor Gardens, London, S.W. 1, copies are $5.50.



MACHINE TOPICS

BY R. F. HUBER, *Machine Tool Editor*

HAVE YOU ever wanted to throw your carbide cutter grinding problems in the wastebasket?

In a couple of years you may be doing just that. Throwaway carbide cutting tips already are taking hold in many shops. The carbide makers predict that the throwaway business may soon amount to 30 per cent of the total.

Specials — Actually, there will be no great effort to apply them across the board. Carboloy points out that they'll be slow to take hold, especially where deep cuts on long production runs are involved and where users lean toward integral breakers.

But on a great variety of short-run jobs, where cutting tools must be changed and serviced regularly, these disposables may be the answer to a host of tooling problems.

High Production — Weason Co. also points out that these cutters are ripe for automation lines, where tool change must be kept to a minimum. As production per machine goes up, so goes the cost of downtime.

Until someone comes along with a cutter material that just doesn't wear, downtime for tool change is unavoidable and will have to be kept to a minimum.

Must Go—On this point of downtime, Kennametal emphasizes that in view of high labor costs and huge investments in machining equipment, it's imperative that machines be kept running as much of the time as possible. Kennametal engineers feel that these throwaway cutter tips help fill the bill by reducing the time required for tool changing and for tool servicing.

Savings—Throwaways may help save you money two ways. First, the tooling system is designed to cut initial investment by about one-third over other mechanical holding techniques. The whole concept of throwaways is based on the development of less expensive, simpler to use, more adaptable holders to apply less expensive blanks (less carbide metal) to the work.

Second, these expendable tips are less expensive to use, both because of the quick tool change, and because there is little or no maintenance involved. Tool grinding equipment isn't needed—can be devoted strictly to special form cutters and others. Throwaways also reduce or eliminate the need for tool brazing equipment, since they're mechanically held to the shank or bit.

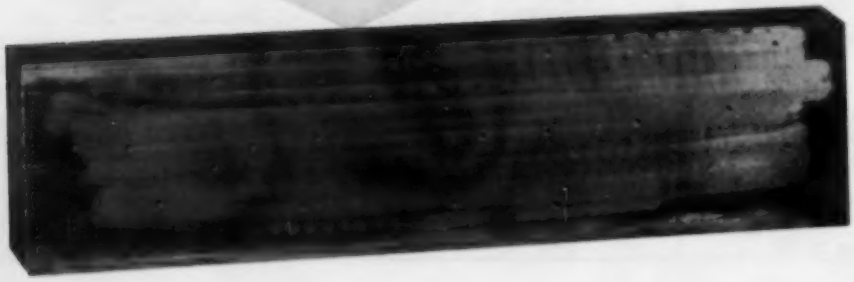
Throwaways aren't new, already have a foothold in some shops. All of the carbide makers queried by STEEL report an accelerated trend toward their wider use.

Depending on the type of cutter used, the blank is a neat package of 6 or 8 cutting edges that can be applied one at a time, indexed through the series and then the whole tip discarded.

Postscript — Just got to thinking how big a topic for conversation this carbide tooling has become. In the first six months of last year alone, we carried 21 editorial items on carbide tools in STEEL. And there are no signs of diminishing interest.

How's this for

This one-inch section from the center slab of the steel being quenched above varied only 11 Brinell points over its entire area. Steel is AISI 4150, and the slab measures 80″ long, 16″ wide, and 4½″ thick.



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Charles E. Larson and Sons, a large forging company in Chicago, are enthusiastic users of Gulf Super-Quench. Recently, however, they had cause to be amazed at its ability to maintain uniform hardness and reduce rejects.

After quenching the large slab of steel shown in the photograph in Gulf Super-Quench, they cut a section one inch thick from the center and checked the hardness at the points shown in the photo. It varied only eleven points over the entire area of the section—a hard-to-believe uniformity pattern.

This is further proof of Gulf Super-Quench's ability to achieve more uniform hardness and get deeper hardening without cracking and distortion.

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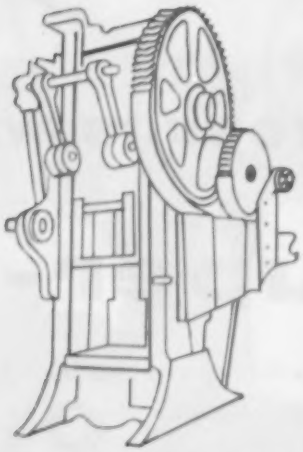

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Climate for Testing

A portable controlled temperature cabinet at Glenn L. Martin Co., Baltimore, makes possible testing temperatures from −100°F to 400°F. Tension and compression testing is done on a variety of aircraft materials. Designed by Baldwin-Lima-Hamilton Corp., Philadelphia, the cabinet will accommodate testing machines of three capacities up to 400,000 lb

Foundry Cost Manual

The publication of a cost manual for gray iron foundries is announced by D. H. Workman, executive vice president, Gray Iron Founders' Society. Clearly written, it is understandable to those with even limited accounting experience.

The 110-page manual, which goes into all operating departments of a foundry, is available to nonmembers at $15. Members may get extra copies for $5. Write the society, 930 National City-East Sixth Bldg., Cleveland 14.

Metal Directory

The 1954 edition of the *Standard Metal Directory* lists iron and steel plants in the United States and Canada. Sections are devoted to the ferrous and nonferrous metal foundries, nonferrous metal rolling mills, smelters and refiners of nonferrous metals. Fabricators, manufacturers, distributors and dealers of steel and metal products as well as other special listings are included.

Copies are $15. Address Standard Metal Directory, 425 West 25th St., New York.

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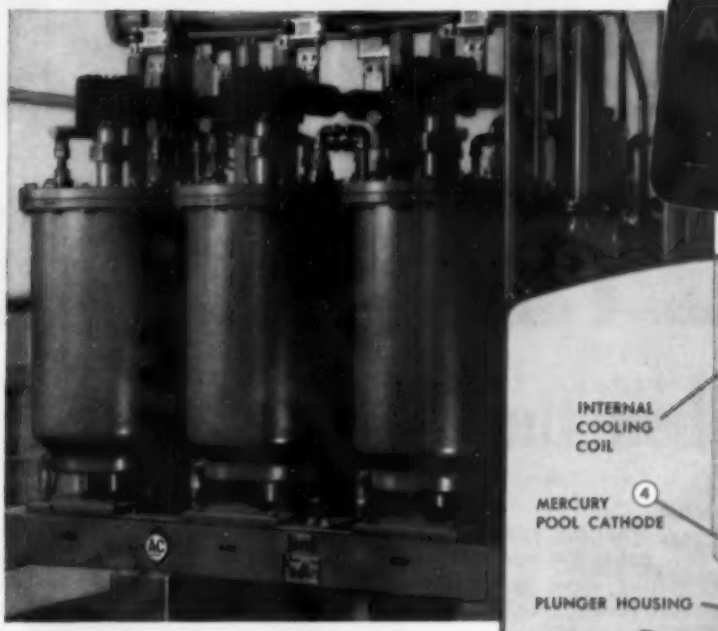
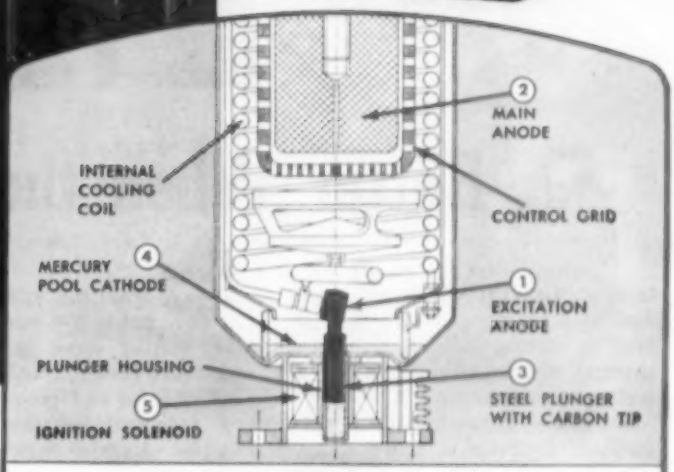


This 1000-kw, 6-tube excitron rectifier is typical of units used for heavy-duty service in many industrial plants.

ALLIS-CHALMERS

Mercury Arc Rectifiers



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The excitron tube has an excitation anode ① in addition to the main anode ② . With the excitation circuit de-energized, the steel plunger ③ floating in the mercury pool cathode ④ makes positive contact with the excitation anode (as shown).

When the excitation circuit is energized, the ignition solenoid ⑤ pulls the steel plunger ③ away from the excitation anode ① and under the mercury pool cathode ④ , thus drawing a dc arc and forming the cathode spot, which makes conduction of load current by the tube possible.

If power is interrupted the plunger will float up, contact the excitation anode and automatically re-establish the excitation arc when power is restored.

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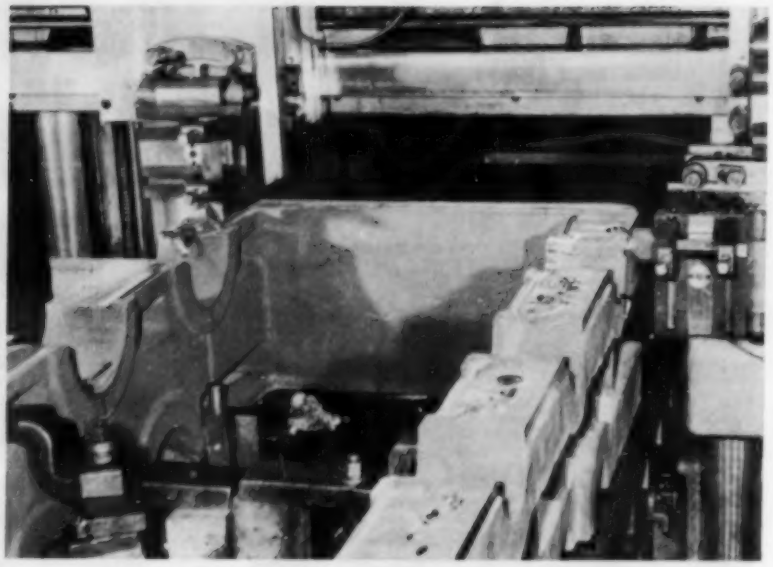
Years of operation in hundreds of installations have proved the reliability and ease of operation of Allis-Chalmers mercury arc rectifiers. You can get complete information from your nearby A-C office. Or write Allis-Chalmers, Milwaukee 1, Wis.

A-4581

ALLIS-CHALMERS

To speed production of planed parts a maker of heavy equipment installed carbide tools which are . . .



Better When the Heat's On

LONG PLANER CUTS on large cast steel parts generate terrific heat in cutting tools. This causes thermal cracks, regardless of a tool's wear resistance.

Morgan Engineering Co., Alliance, O., producer of heavy equipment for steel mills, daily fights the battle of long cuts in machining parts for ladle cranes, open hearth charging machines, overhead cranes and rolling mills.

Lost Efficiency—Until recently the company babied along cutting tools to keep overhead costs down. This avoided broken tools and machine down time due to excessive tool changing for grinding. But planer speeds were such that full machine efficiency could not be used.

370 carbide tool slices off almost ½-in. of metal on one of two parallel sides of a rough 2000-lb casting at a feed of 180 sfm

Today, with the application of Carboloy grade 370 cemented carbide, cutting speed is up—about four times faster. Tool life is more than doubled and production time is 50 per cent less than formerly required. Machine efficiency went up 15 per cent.

Better Staying Power—This gain was made in spite of thermal cracks generated, which still occur in 370 but are longer coming. And 370 holds up better with the cracks.

Thermal cracking of the cutting tool occurs when the tool becomes too hot, then quenches in air too long on the return stroke. With previous cutting tools, planer feeds and speeds had to be adjusted downward to get any production at all, but thermal cracking still provided considerable trouble.

Example—A typical job is planing the center section of a gear case used in a steel mill beam straightener. Work calls for both a rough and finish cut, with final tolerance close enough to provide an oil-seal fit when the three sections of the gear case are put together. Work is done on a 100-hp double cutting Guillemin-Sergot-Pegard planer made in France.

With high-speed steel tools, it required 13 hours to complete the job. Maximum speed and feed that could be used was 40 sfm at 0.062 in. With application of 370, production time shrank to between six and seven hours, including tool honing, tool changing and other adjustments. Between 1500 and 2000 cu in. of metal are removed before thermal cracks appear.

Speeds and Feeds—Roughing cuts are taken at 160 to 180 sfm, with feeds of 0.040 to 0.080 in., and depth of cuts from 5/16 to ½-in. The planer operates at about 40 hp with no chatter or vibration.

At Morgan Engineering brazed-type tools are used with the following angles: 28 degrees side cutting edge angle, 30 degrees negative back rake, 15 degrees positive side rake, 8 degrees end cutting edge angle.

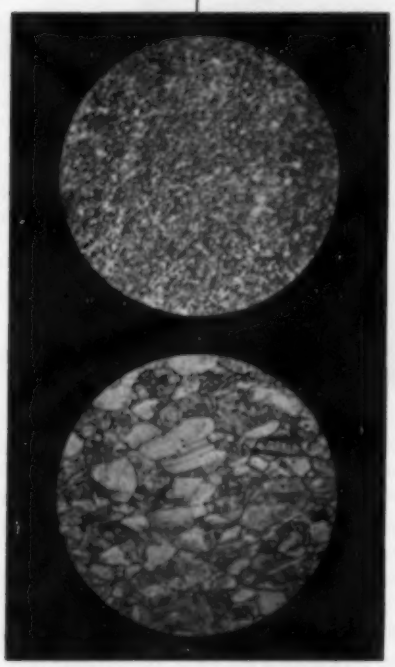
Other Angles—Tools have a relief of 5 degrees on the carbide and a clearance of 8 degrees on the steel along the side cutting edge angle. Relief on the end cutting edge angle is 7 degrees. Radius is held to 1/16-in. maximum on each tool to generate as little heat as possible.

Carbide tools are reground, not for edge wear, but to eliminate thermal cracks. They provide between 10 to 15 regrinds before taken off the job.

DURAFLEX . . .

a NEW fine-grain phosphor bronze with 30% GREATER ENDURANCE LIMIT

FINE-GRAIN STRUCTURE IS THE MAIN REASON . . .



Micrographs (75x magnification) tell the inside story. Top, note the fine-grain structure of DURAFLEX. Compare it with the grain structure of ordinary phosphor bronze, bottom.

DURAFLEX* is a new, fine-grain phosphor bronze developed and sold only by Anaconda. Comparative fatigue tests show that the endurance limit of DURAFLEX is approximately 30% higher than for ordinary phosphor bronzes. In surface appearance, surface smoothness and resistance to corrosion, it is equal to, or better than, other phosphor bronzes. Further, its formability is increased with no sacrifice in yield strength. DURAFLEX is a *premium* phosphor bronze in every way except cost; there's *no increase in price.*

If you're now using a hard-temper phosphor bronze, chances are that you can do the same forming in extra-hard temper DURAFLEX. If you're looking for longer life in the parts you form, we'll be glad to send you a free sample of DURAFLEX. Try it, test it, and you will agree that it's superior.

8870

*Trade Mark

DURAFLEX fine-grain phosphor bronze

an ANACONDA® product

MADE BY THE AMERICAN BRASS COMPANY

Try a FREE SAMPLE of

DURAFLEX

Sheet . . . up to 0.062" thick
Wire . . . up to 5/16" diameter (approx.)

FREE SAMPLE

The American Brass Company, Waterbury 20, Connecticut
(In Canada: Anaconda American Brass Ltd., New Toronto, Ontario)

Yes, we'd like to try DURAFLEX. Please send us a free sample of
sheet in _____ temper, _____ thick,
wire in _____ temper, _____ diameter.

☐ We'd like to talk to one of your metallurgists about DURAFLEX.

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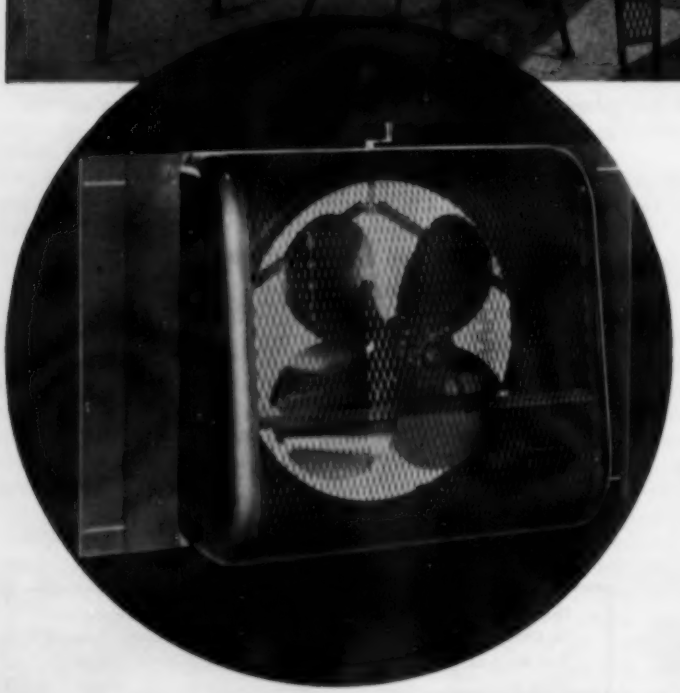

The window ventilating fan is a product of Atlas Tool & Manufacturing Company, St. Louis, Mo.

Furniture made by Duro Chrome Corporation, St. Louis, Mo.

The use of Penmetal expanded metal improves almost any product. For example:

Furniture—Flattened expanded metal, painted or enameled is widely used in furniture construction both for utility and for decoration. Not only strong and light in weight, it is also attractive in appearance.

Fans—Penmetal expanded metal provides a safe, sure guard for fans, yet permits free passage of air. The symmetrical diamond pattern adds beauty to the design.

Penmetal expanded metal is sheet metal that has been slit and expanded to as much as ten times its original width. Available in carbon steel, aluminum, stainless steel, Monel, Inconel, and other metals; large or small mesh; light or heavy gauge.

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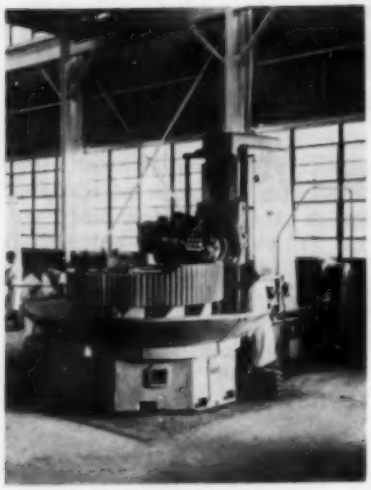

Accuracy in Oversize

This Gould & Eberhardt heavy-duty gear hobber installed at Illinois Gear & Machine Co., Chicago, is capable of doing precision work on gear blanks of 132 in. diameter. It will cut spur, helical and worm gears to a tolerance of 0.0003 in. for maximum tooth spacing error and 0.001 in. for parallelism of teeth. The work table can safely handle a 100,000 lb load

Tool Design Awards Offered

Awards totaling $12,000 will be made for papers describing the use of arc welding in machine tool design under the Machine Tool Design Award Program. The competition is sponsored by the James F. Lincoln Arc Welding Foundation, Cleveland. Closing date is July 15, 1955.

Open to all persons who are or have been engaged in design or making of metal cutting or forming machine tools, the program is aimed at stimulating creative engineering. A booklet describing the program and how to participate is available from the foundation.

New NBS Standard

Sample No. 167 of cobalt-base heat-resisting alloy is available from National Bureau of Standards. Constituents are: Carbon 0.38, manganese 1.64, phosphorus 0.010, sulphur 0.007, silicon 0.44, copper 0.03, nickel 20.65, cobalt 42.90, iron 2.13, chromium 20.00, vanadium 0.01, molybdenum 3.90, tungsten 4.50, niobium 3.15, tantalum 0.08. Price is $5 per 150-gram unit.

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. . . Better results . . . lower costs for your spray washing operations

Whatever your spray washing operations, you are guaranteed better results, lower costs when you call in the Detrex field technician.

The soil being removed, the type of spray washing equipment you are using and all other influencing factors are first thoroughly analyzed by the Detrex technician. This survey is made *without* disrupting your operations in any manner. Then, after careful study, he will recommend a cleaner tailored to your needs along with specific data on the improved performance you can expect from it.

Offer These Advantages

1. *Will not foam.*
2. *Leave no lime scales or deposits on coils, heat lines, etc.*
3. *Will emulsify inorganics—saponify organics.*
4. *Easy to control by titration.*
5. *Perform exceptionally well at low concentrations.*
6. *Free rinsing—leave no salts or other deposits that bleed out after painting.*

But that's not all of the story . . . Detrex service continues, on a regular basis, for as long as you use the operation! The Detrex technician visits your plant at reasonable intervals to make certain that top efficiency is maintained and that you are kept abreast of constantly improving techniques; he even assists in the training of personnel if you desire.

It all adds up to what we call "Service with a Saving" . . . one of the important values on which our business has been built.

Investigate the benefits of Detrex spray washer cleaners for your plant. An easy way to do it is to use the coupon below . . . how about doing it now.

Please send us your alkaline and emulsion cleaning file ☐. We would also like a Detrex technician to make recommendations on our cleaning operations ☐.

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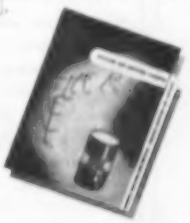


DETREX CORPORATION

DEPT. MW-101, BOX 501, DETROIT 32, MICH.

Appliances Use More Aluminum

Manufacturers are finding there are more advantages than meet the eye. Take the case of the all-aluminum steam iron

ALUMINUM is aiding the appliance manufacturer in creating consumer demand both on the sales floor and in the home. And the appliance makers recognize that fact because they're buying greater tonnages of the metal every year.

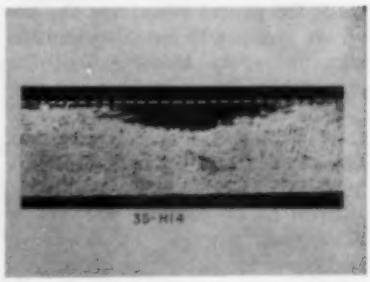
The increasing consumption may be attributed to several factors. Certainly one of major importance is the ever-increasing supply of the metal. Aluminum production capacity has doubled since 1950.

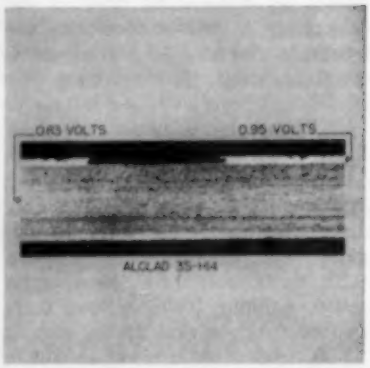
Competition Keen — Aluminum has been tried at one time or another in practically every component of appliances. In many cases it became the preferred material, but in others it wasn't ready and has had to wait or is waiting for further development on alloys, fabrication methods or finishes.

Take, for instance, the all-aluminum steam iron now being developed. The sole plates are of cast aluminum, either buffed to a high lustre or buffed and then cold chrome plated. Recently, some of them have been faced with a veneer of steel or stainless alloy. Hoods or covers are either buffed, plated or vitreous-enameled.

Tough Job — The water tank, shown in drawing on p. 98, presents the greatest challenge. Here, specialty aluminum products can reduce assembly costs and extend the service life.

Since few home makers read instructions, the tank must have good resistance to corrosion from waters "fit to drink." Resistance to the perforation type of corrosion is ob-





Photomicrographs of non-clad 3003 and alclad 3003 sheets, after identical exposures, show how alclad resists perforation corrosion from tap waters

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Write today for one or all of Florida's ten new folders which set forth in plain, unvarnished form the basic facts about Florida's opportunities for new industry. These folders have been prepared in convenient individual file-size form for ready reference.

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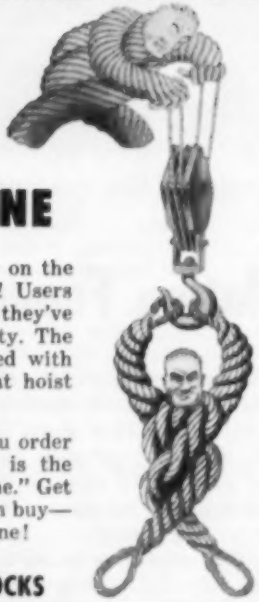
Run Your Toughest Tests! Prove Tuffy's Toughness Yourself!



Tuffy® HOIST LINE

Equals Tuffy Slings in ability to stay on the job longer . . . reduce operating costs! Users report Tuffy Hoist Line is the best they've ever seen for strength and wearability. The reason? Tuffy is specially constructed with the extra flexibility and stamina that hoist line work *demands*.

No Confusing Specifications! When you order Tuffy, all you tell your distributor is the length, diameter and "Tuffy Hoist Line." Get all the hoisting service your money can buy—reeve *your* crane with Tuffy Hoist Line!

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At no cost or obligation to me, please rush the material I have checked:

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tained by using alclad aluminum sheet for the tank top, and a special brazing sheet for the tank bottom. That way a surface that is anodic to the core material in most solutions encounters the different kinds of water found in various sections of the country.

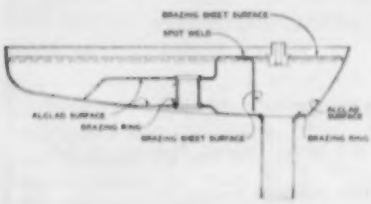
Furnace Brazing—The tank was so designed to be suited to furnace brazing. Brazing upside down offers the best arangement for supplying filler metal to the joints and providing alclad surfaces for the inside of the water tank.

The assembly was designed to have the components self-jigging so that the only fixtures required are those to support the tanks through the furnace. Spot welding and mechanical staking are two convenient methods by which small components may be self-jigged for brazing.

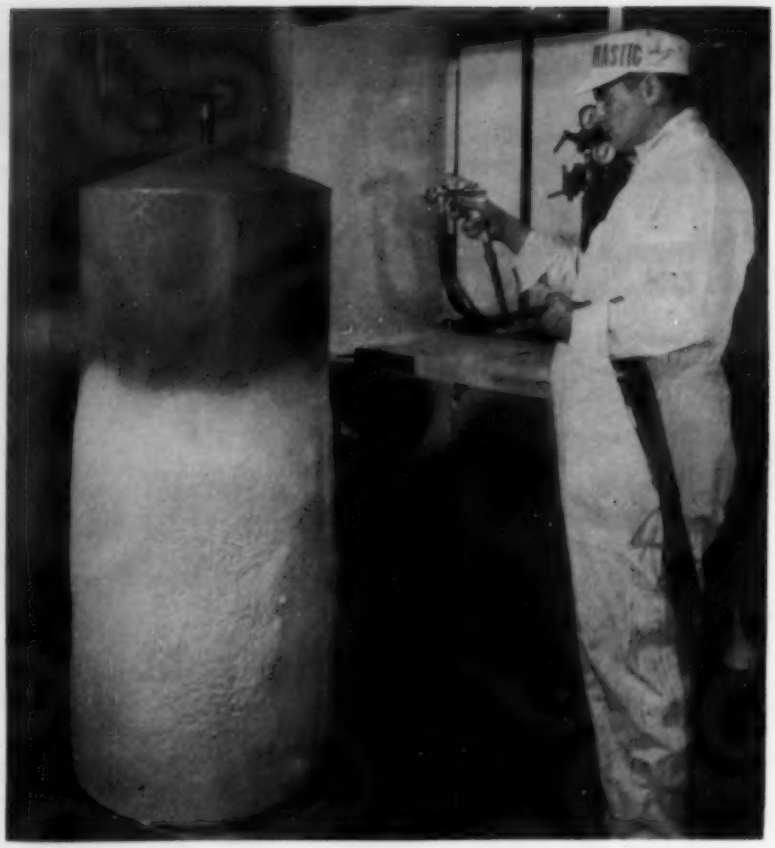
Filler metal is supplied by means of wire placed at the joint, by shims of brazing sheet or by a braze alloy cladding on a sheet member of the assembly.

Checks Corrosion — Photomicrographs of bare 3003 alloy and alclad 3003 show interesting corrosion results. The bare sheet has suffered a pitting type of attack, while the alclad sheet has suffered only surface attack as a result of the electrolytic protection of the cladding alloy.

Teakettles taught fabricators what to expect in corrosion protection of the steam iron water tank. Some areas were found to have waters containing significant concentrations of heavy metal salts. Bare 3003 alloy teakettles pitted just like the sample illustrated. After a switch to alclad, only five kettles out of a total of 250,000 developed holes after seven years of use.



Typical cross section of the aluminum steam iron brazed assembly is uupside-down, but that's the way the design could best utilize brazing. Hole at the center is for the thermostat and the tube at the front is for filling with ordinary tap water



Spray resin on like this and your . . .

Insulation Foams Into Place

LOOKING for a new way to insulate those hard-to-cover surfaces around your plant? How about an insulation that is sprayed like paint, yet foams into place at 20 times its original thickness and dries to a semirigid mass.

Such a product is now available. Known as Poly-Cell, it was developed by Insul-Mastic Corp. of America, Pittsburgh. With this new foam insulation, there's no cutting and fitting around valves and other projections and no fastening problems. It will adhere to practically any clean, dry surface.

Specifications—High temperature limit of the insulation is 225° F. Lowest temperature at which it has been tested so far is −40° F. It meets fire resistance specifications, since it is noncombustible in either its liquid stage or after it has dried.

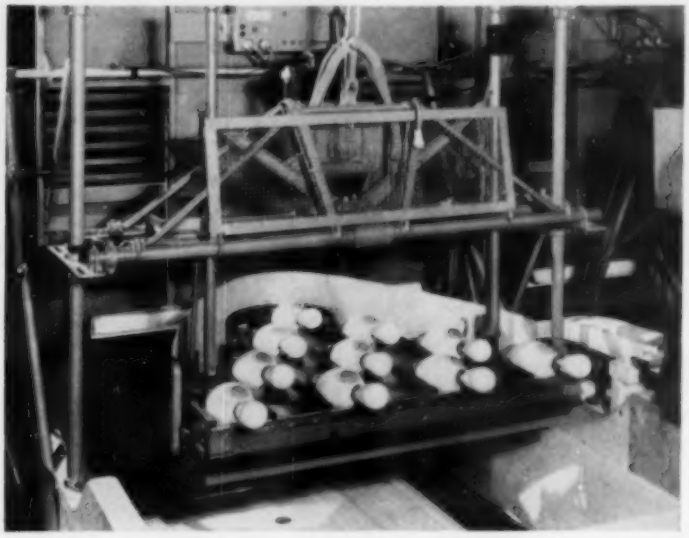
Poly-Cell can be applied at any desired thickness in one coat by varying the amount of liquid sprayed. This will mean a savings to consumers, says Insul-Mastic, since some industrial insulations are not supplied in less than 1 in. thicknesses.

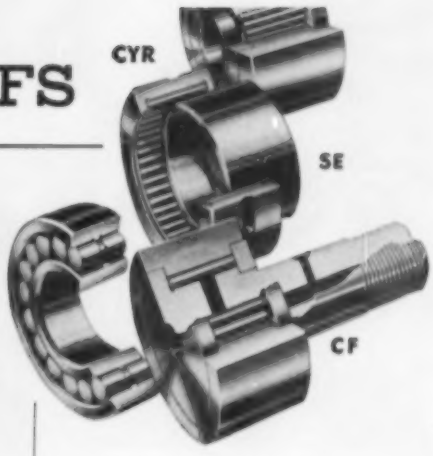
Equipment—The foam insulation, however, requires special spraying machinery. Only the spray gun is conventional. Before it is sprayed, Poly-Cell is two liquids which must be blended and heated to a certain temperature. That heat must be retained until the liquids reach the gun.

At present, Insul-Mastic plans to have all field applications of the material made by its own crews. Later, the company will have its national licensee organization do both contracting and application of the product.

(Advertisement)

McGILL BEARING BRIEFS





CAMROL CF bearings ADD TO SAFETY of 22,000 Brunswick-Balke-Collender semi-automatic pinsetters now in use

When the pinboys "set 'em up in the other alley" a McGill CAMROL Cam Follower helps them do the job without danger to themselves or damage to the pin-setting machine.

Known as the B-10 Semi-Automatic Pinsetter, this machine is a product of The Brunswick-Balke-Collender Company and is in use on 22,000 individual bowling lanes throughout the world.

In these machines the CAMROL CF bearing is used in the safety latch mechanism to lock the cam action and prevent the machine from recycling during pin setting. Used by the company for 4 years, the CAMROL bearing has given no trouble despite the literally millions of cycles these 22,000 machines have been operated.

CAMROL Cam Follower bearings utilize a full complement of small diameter followers with outer race and integral stud and flange custom heat treated for the ultimate in radial and shock load capacity.

Precision tolerances on all grinding surfaces with simplified lubrication minimizes internal wear and increases bearing life. Both starting and running friction are reduced to a minimum.

McGill designed and built the first Cam Follower and used 20 years of experience with thousands of applications to perfect the right Cam Follower for any cam action application.

BEARING SELECTION GUIDE

A revised 140 page Bearing Selection Guide, complete with 30 pages of vital engineering data, has been released by the McGill Manufacturing Co. Ask for Catalog No. 52.

CAMROL CF BEARING USED from BEGINNING of PRODUCTION by SCHIELD-BANTAM COMPANY

More than 5,500 cranes and excavators built by Schield Bantam since 1945 use CAMROL CF Bearings in SHIFTING COLLAR vertical swing shafts and drum clutch applications. With maintenance negligible and performance excellent the manufacturer asserts, "Using CAMROL CF Bearings offers an overall price advantage and insures maximum product quality."

PINES PRESSURE DIE HOLDER PUTS up to 18,000 POUND LOAD on CAMROL CYR BEARING

Pines Engineering Co., Inc., has used the CAMROL CYR Bearing for 6 years in tube bending machines and has never had a failure. The bearing takes the full bending moment in Pines pressure die holders that bend extra heavy pipe in sizes ranging from ¾" to 4" without scratching the tubing.

50th Anniversary

McGILL design leadership has given you these important developments

★ First full type roller bearing ★ First guided full-type roller bearing ★ First Cam Follower roller bearing ★ First sealed roller bearing

McGILL MANUFACTURING COMPANY, INC., 301 N. LAFAYETTE ST., VALPARAISO, INDIANA

Engine flyweights are masked with Scotch brand lead foil tape before copper plating

Photos courtesy Minnesota Mining & Mfg. Co., Pratt & Whitney Aircraft Co. and Lead Industries Assn.

Masking Problems Eased

LEAD TAPE that sticks is smoothing out touchy plating problems at Pratt & Whitney Aircraft Co.

Lead foil and lead tape are regularly used for masking to take advantage of what platers call thieving action. It means that high current densities at sharp corners are prevented from causing excessive build-up of plated deposit. But on some jobs the nonadhering foils do not always give the tight seal required of a masking material.

The nonslip characteristics of sticky tape pay off especially when plating parts in selective areas where an accurate line of demarcation is required.

Accurate—For example, Pratt & Whitney plates a variety of propeller shafts and crankshafts where thieving is required at the edge of the areas to be plated. It's done by applying the lead backed tape after which the parts are wax coated all over. The wax is then scraped from the areas to be plated.

After plating, wax and tape are removed. No additional cleaning or grinding of the area adjoining the plated area is needed because the lead tape holds the line where it was originally applied.

Rear crankshaft section (right) and propeller section (left) are masked with lead tape before chromium plating at Pratt & Whitney Aircraft

Small Areas—Another use is on parts that require plating of small areas. Application of an organic masking material may reduce the metallic area exposed in the bath so much that a good plating job is hard to do.

For example, areas of only 2 sq in. may cause trouble because equipment won't allow the current to be lowered to proper current density for the job. In such cases, lead tape gives added metallic area where metal can be deposited.

Saves Time—Pratt & Whitney finds that lead tape can be applied to any surface quickly, with no risk of its slipping out of position or working loose. Parts now can be masked in five minutes which formerly required as long as one half hour. The tape is used on interior surfaces as well as exterior ones and on parts that could not be properly masked easily by any other method.

The lead tape mask is being used at Pratt & Whitney in plating nickel, tin, copper, cadmium, silver and lead.

New Field—Other than plating, lead backed tape is used as the radio antenna in Bell Aircraft helicopters. The tape is applied quickly and permanently around the inside of the bulging plexiglas windshield of the helicopter.

BIG HOBBERS for ILLINOIS GEAR

This mammoth new gear hobbing machine, now in operation at Illinois Gear, is the most accurate and largest machine in existence for fast precision hobbing of BIG gears. Equipped with 12" x 15" ground hobs, the largest ever made, it does precision work on blanks up to 100,000 lbs. and 134 inch diameter, 3½ inch C.P. and 54 inch face. Spur, helical and worm gears can be cut to spacing tolerances as low as .0003 inch.

Whatever your needs, you'll find the right machine and tool for your job at Illinois Gear.

Look for this mark (ILLI) *... the symbol on finer gears*

ILLINOIS GEARS Reg U.S. Pat. Off.

Gears for Every Purpose ... one gear or 10,000 or more

ILLINOIS GEAR & MACHINE COMPANY

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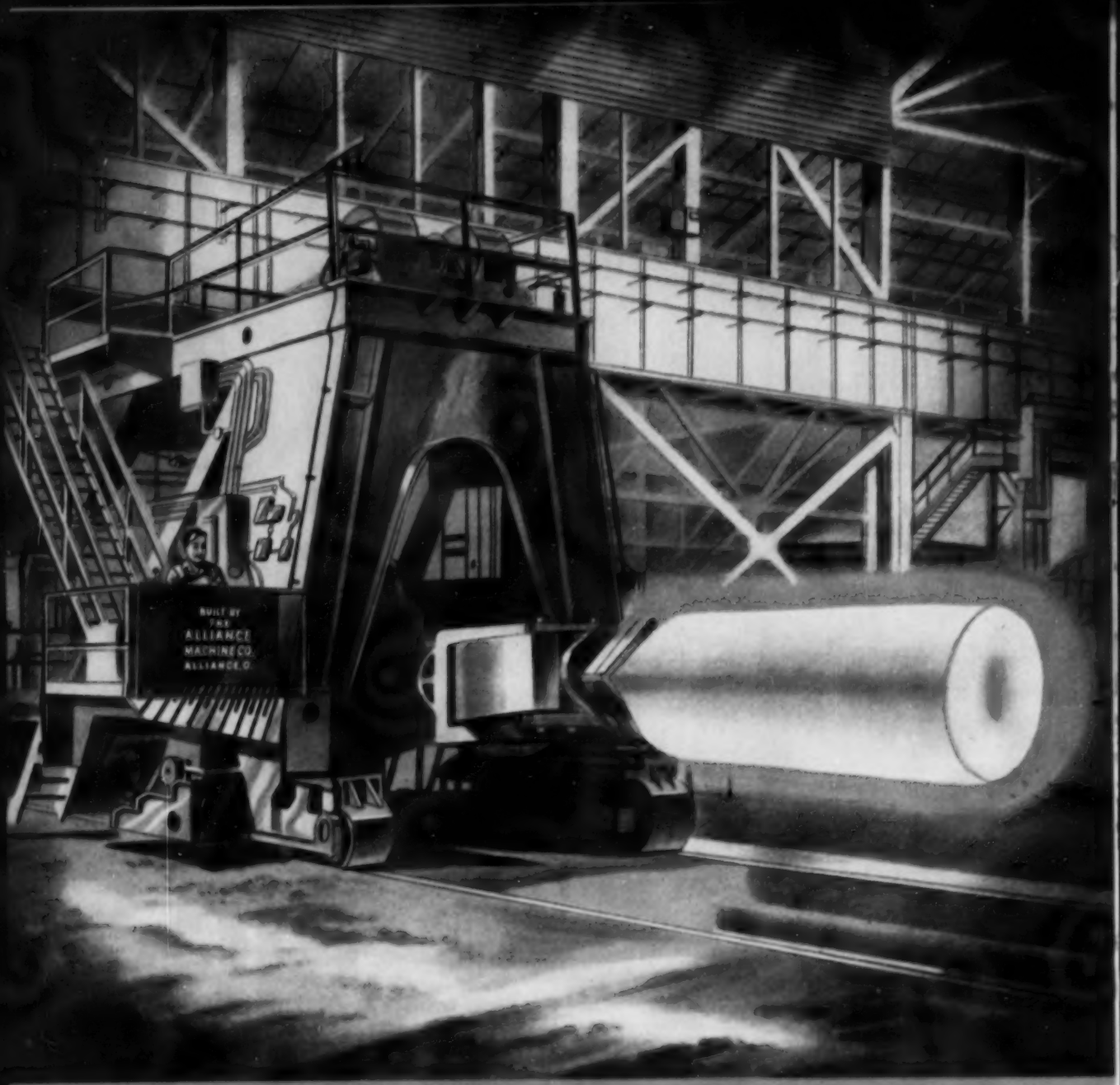

Alliance

20-TON FORGING MANIPULATOR

• The Alliance Machine Company builds manipulators for all types of forging work.

The manipulator shown here is designed to handle 20-ton ingots and is equipped with hoist, leveling device, longitudinal motion and power grip revolving tongs.

This manipulator is effectively cushioned to reduce impacts, thereby reducing jar to operator and equipment.

By means of finger-tip control operator can regulate all motions from sitting position.

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THE ALLIANCE MACHINE COMPANY

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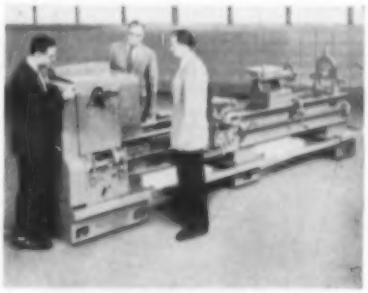
NEW PRODUCTS and equipment

Write directly to the company listed for more information

All-geared Head Tray-top Lathes Have 12 Spindle Speeds

Speeds are in geometric progression. There is a 3-lever, color match, direct-reading shift mechanism. The spindle, with long taper key drive nose, is rigidly mounted in three zero precision antifriction bearings. The diameter of the hole through the spindle is $1\frac{3}{8}$-in. for a 21½-in. lathe. Spindle holes $2\frac{7}{16}$-in. in diameter are available on demand. The $2\frac{7}{16}$-in. diameter spindle hole is standard for the 26-in. lathe. Fifty-four thread and feed changes are made available through a totally enclosed, automatically lubricated quick change gear box.

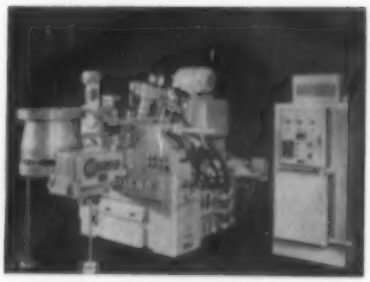
The apron is a one-piece, double-walled casting with automatic lubrication. A fully enclosed electrical panel provides a safe accessible place for the power connectors. The lathes are offered with a 5 or 7½-hp motor mounted on the rear of the headstock for easy maintenance. Cincinnati Lathe & Tool Co., Cincinnati 9, O.



Hobbing Machine for Automatic Production of Gears

This high-speed machine will automatically produce gears within controlled specified size limits. Constant and accurate monitoring of gear size during 100 per cent of the gear production cycle automatically adjusts center distances between the hob and the gear blank. This compensates for tool wear or size variation due to temperature changes.

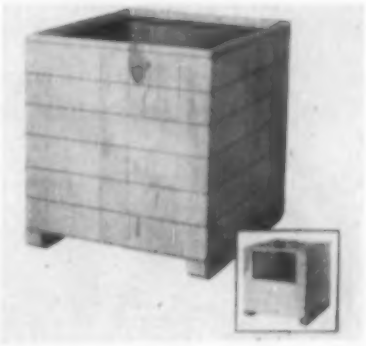
The system consists of a hopper-type automatic feeder (left in photo) supplying the 1445 ultra-speed hopper with gear blanks, a 3-way gear classifier (center foreground) checking gear sizes and a 3-way gear controller (far right) that automatically controls center distances between hob and gear blank. Michigan Tool Co., 7171 E. McNichols Rd., Detroit 12, Mich.



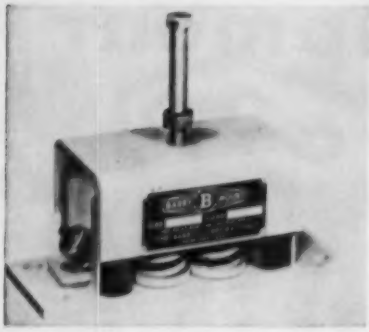
Pallet Box Designed for Multipurpose Jobs

The box is used on production lines as a small parts hopper, for intra-plant shipping of parts and as an assembly bin on production lines. By removing a front section of the wirebound box, it becomes a storage bin.

Boxes are made of sturdy lumber, and skids are varied in design. They are easily handled by lift trucks and hold loads up to 2 tons. They stack 3 or 4 high without damage. General Box Co., 1825 Miner St., Department PR1, Des Plaines, Ill.



Mobile Machinery Mount Has Leveling Features



The mount is designed for use where high absorption of vibration is necessary or where soft floors make control of vibration frequencies difficult. It is available in five sizes, with one, two, four, six or nine springs. The mounts, depending on size, have an effective load range of from 250 to 6700 lb per mount. There is no need to bolt or shim when machines are mounted on spring mounts. Each has a built-in adjustment which permits leveling up to ¾-in.

An adjustable damping feature contributes to the mount's high isolation efficiency. Dampers are faced with friction brake linings, acting on steel surfaces, which dampen horizontal and vertical forces. Machines are made mobile. Outer casings are made of steel, with springs of oil-tempered steel. Neoprene bumpers resist oil, grease and caustic cleaning solutions. Barry Corp., Watertown, Mass.

New Line of Fractional Horsepower Motors

Developed to meet the need for a smaller size, lightweight motor, the motors are ¾-in. lower and 1 in. shorter than NEMA 56-frame motors having the same ratings. The distance from base to center line is 3 in. The line incorporates a simplified straight-through ventilation system with vent holes limited to the bracket areas.

On single phase motors, a terminal board design permits change of voltage or motor reversal by interchanging quick-disconnect plugs in the motor conduit box. This simplifies the wiring of the motor to the power source and increases the usable area for wiring purposes. The sleeve bearing construction provides lubrication, and nylon thrust washers permit a variety of mounting positions. The rotors and brackets are die-cast. The motor will be available in both resilient and rigid mountings. Westinghouse Electric Corp., Box 2099, Pittsburgh 30, Pa.

Automatic, Self-contained Drill Unit

Parts are interchangeable on the Air-oil-matic drill units. One is powered by oil, the other by air. Both are hydraulically controlled. They were designed for a wide range of drilling, tapping, reaming, chamfering, spot facing, hollow milling, centering and related operations. They can be mounted vertically, angularly or horizontally. Feed in both directions can be attained by turning a set screw. Feed rate, feed stroke and quick approach rate are adjustable. Controls and actuating devices can be set to provide a combination of sequence of operation.

Among the features of the two units are: A 6-in. maximum stroke, with the feed stroke infinitely variable between 0 and 4½-in., rapid approach variable from 0 to 6 in.; positive stop for spotfacing or counterboring repeats within 0.0005 in. Morris Machine Tool Co., Harriet St., Cincinnati 3, O.

Temperature Indication to Closer Temperature Intervals

Pellets for 425 and 475° F have been developed. Indicators are now available in 12½° steps from 113° to 400° F, in 25° intervals from 400 to 550° F and in 50° steps from 550 to 2500° F. Packaged in tubes containing 20 pellets of a single temperature rating, each indicates its specified rating, to plus or minus one per cent.

The photo shows a 425° F pellet melting and a 475° F pellet unmelted. Tempil Corp., 132 W. 22nd St., New York 11, N. Y.

Straddle Truck with 20,000-lb Capacity

Used in the lumber industry originally, the straddle trucks are used today in industries wherever heavy and bulky products are handled. The Model MD has a lifting capacity 2000 lb greater than its predecessor. Power has been increased to 91 hp with a Hercules model JXE-3 L engine.

Mechanical improvements include a 12-in. clutch, vacuum power brakes and heavy-duty hypoid differential. Additional new features are a positive controlled, simplified swing mechanism, new load shoes and link rods. The instrument panel includes an electric fuel gage as standard equipment. Package sizes are available up to a maximum height of 78 in. or a max width of 76 in. Hyster Co., 2902 N. E. Clackamas St., Portland 8, Oreg.

Double Crank Welded 60-ton Automatic Steel Press

With three available distances between uprights (30, 37 and 45 in.) its width of feed is 10 in. The speed range is from 80 to 240 spm.

The press features the Diebel cylindrical-type ram for accurate alignment. Air clamped feeds prevent stock distortion and permit positive feeding. Standard equipment includes a balanced crankshaft, air counterbalances, an automatic metered lubrication system, complete electrical controls, air clutch and specially designed shock mounts.

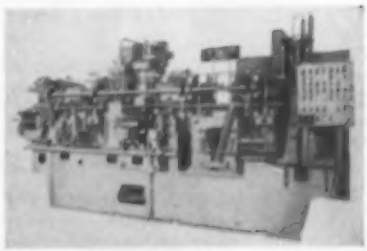
There is an automatic shut-off control. The flywheel guard is safety-type. Press rating (bottom of stroke) is 60 tons for all three models. Optional features include an air ejector and cam, a scrap-cutter and a knockout bar in the ram for compound dies. Approximate weight of the 30-in. model is 14,000 lb, the 37-in. model is 15,500 lb, and the 45-in. model is 17,000 lb. Di Machine Corp., 2701 W. Irving Park Rd., Chicago 18, Ill.

Electric High-lift Walkie Truck with 1000-lb Capacity

The telescopic tilting counterbalanced JackStacker has 24-in. forks and is 63¾-in. long. It has a capacity of 1000 lb at a 24-in. load length. The collapsed height is 83 in., with a fork elevation of 130 in. The wheel base is 25 in. The tilt is 5 degrees in and zero degrees out. Chisel forks, 1 in. thick, are standard. It will operate in aisles 64 in. wide, with 24-in. long loads.

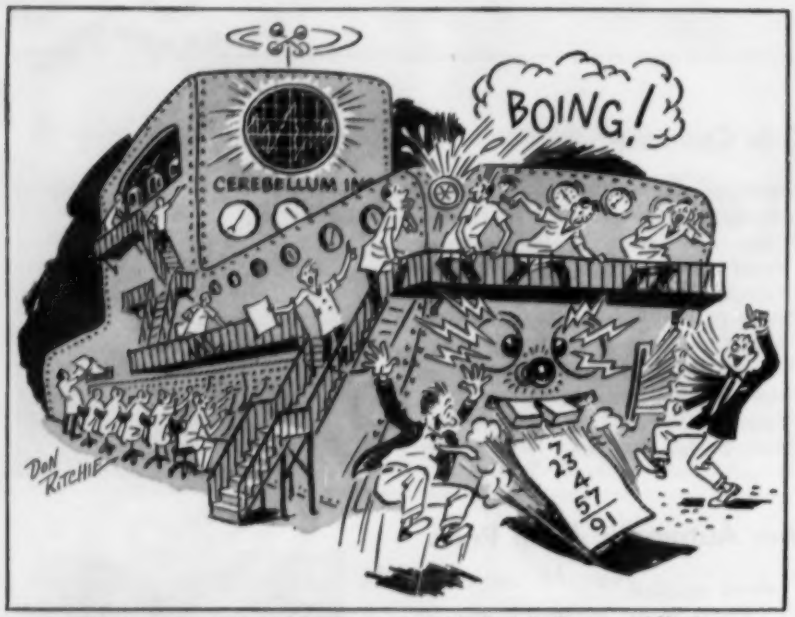
The controls are in the handle head. The brake can be released and power applied with the handle in the vertical position, saving further in aisle space. Factory-sealed bearings are used throughout. Periodic lubrication is not needed. The truck is ideal for appliance warehousing and similar operations where high stacking is required in minimum aisles. Lewis-Shepard Products Inc., Department R-3, Watertown, Mass.

Automated Piston Line Adjustable to Different Size Pistons

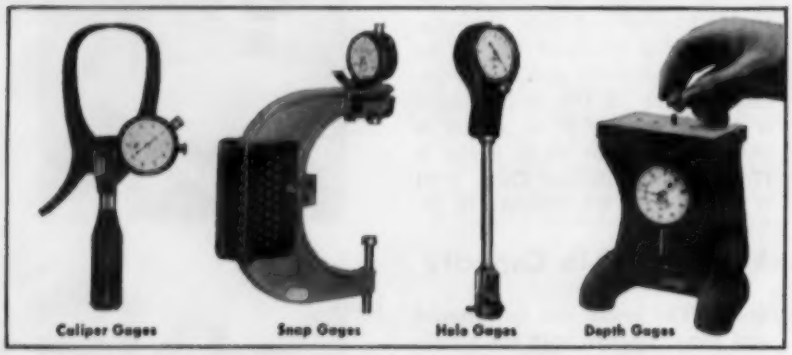


Nylon suspension fingers are attached to the shuttle tracks. They lock each piston in position for all operations. At the load and positioning station, a location bar aligns the pistons at the proper interval and proper position. A mechanism activates the shuttle tracks to move the pistons from station to station.

The photo shows the portion of the line that loads and positions, idles, weighs piston, records weight, mills piston to weight, blows out, idles, reweighs and unloads. LaSalle Tool Inc., 3840 E. Outer Drive, Detroit 34, Mich.



BUYING A FANCY GAGE FOR A SIMPLE JOB is just as ridiculous. Paying for accuracy you don't need is equally extravagant. Before you invest in costly, complicated air, electric or electronic gages, investigate the possibility of simple, low-cost Indicator Gages.



WHY PAY MORE? The accuracy of Federal Indicator Gages is entirely adequate for most applications. Their simplicity offers other advantages: no extra equipment to buy and maintain . . . no wires or hoses to drag and tangle . . . no accessories to lose. First cost is low; upkeep is negligible.

INVESTIGATE! Call in your nearby Federal sales engineer. You can depend on him to give you an *unbiased* recommendation of the right gage for your job . . . because Federal sells air, electric and electronic gages as well as dial indicators.

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NEW Literature

Write directly to the company for a copy

Steel Sheets, Wire

Illustrated descriptions of sheets and wire products are included with a table of sizes, weights and lengths of round steel wire by steel wire gage—19 pages. Continental Steel Corp., Kokomo, Ind.

Torque Converters

This line of Torcon torque converters is illustrated and described along with attachments for specific adaptations. Construction is detailed with cutaway drawings—8 pages. Clark Equipment Co., Transmission Div., Falahee Rd., Jackson, Mich.

Castings

Case histories on the use of sand, centrifugal and precision investment castings are given in "Cast to Outlast Destructive Service"—15 pages. International Nickel Co. Inc., 67 Wall St., New York 5, N. Y.

Turbine-Generators

Turbine generators, rated from 2500 to 40,000 kw, are covered. Condensing and noncondensing applications for electric utilities, and special applications in industrial plants are covered in detail—Bulletin GEA-3277C, 54 pages. General Electric Co., Schenectady 5, N. Y.

Overhead Crane

Handling jobs being performed by overhead cranes are illustrated and described. "Presenting Whiting Engineered Cranes" also lists 14 major features of the crane—Unit 80, 11 pages. Whiting Corp., Harvey, Ill.

Electric Motors

The Type J motor for duties requiring a completely enclosed unit is described—bulletin 1879. U. S. Electrical Motors Inc., Box 2058, Los Angeles 54, Calif.

Motion Drawn Press

A new catalog explains the purpose and method of operation of this press —11 pages. Clearing Machine Corp., division, U. S. Industries Inc., 6499 W. 65th St., Chicago 38, Ill.

Draft Fans

The Spid induced draft fans are covered in detail. Illustrations accompany the text—bulletin SI-101. Chicago Blower Corp., 9867 Pacific Ave., Franklin Park, Ill.

Flexible Casting Epoxy

Information on epoxy L-940 is available. The resin was developed to

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provide important manufacturing economies

Because Weirzin has been proved to retain its amazingly uniform protective coating under extreme fabricating operations, it is specified by leading manufacturers for a wide variety of products.

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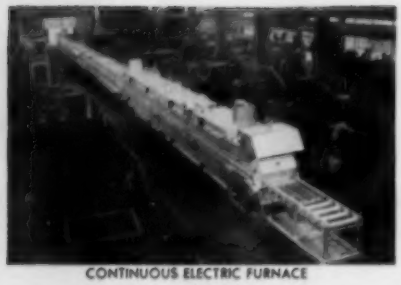
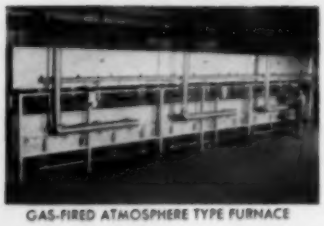
AUTOMATIC ROLLER GRID FURNACE



CONTINUOUS ELECTRIC FURNACE

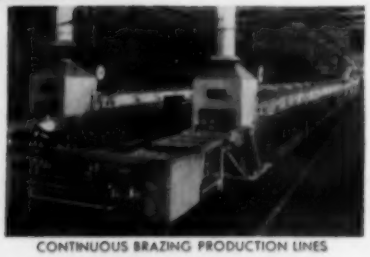


GAS-FIRED ATMOSPHERE TYPE FURNACE

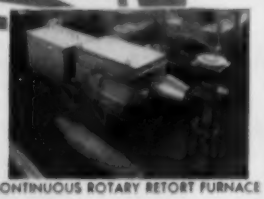
BIG ONES

AUTOMATIC ROTARY HEARTH FURNACE

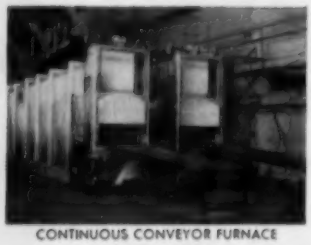
ALUMINUM BILLET HEATER



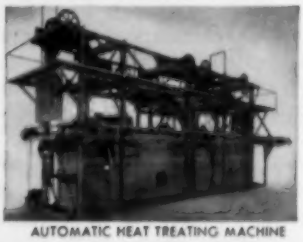
CONTINUOUS BRAZING PRODUCTION LINES



CONTINUOUS ROTARY RETORT FURNACE



CONTINUOUS CONVEYOR FURNACE



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produce a tough resilient surface. In most cases it will compress and eliminate the need for metal clearance between the punch and die. Rezolin Inc., 5736 W. 96th St., Los Angeles 45, Calif.

Multispindle Machine

The 40-10 automatic dial-feed multispindle machine for drilling, tapping, milling, screw inserting and assembly of small parts is described and illustrated—catalog 40-10, 14 pages. Bodine Corp., Bridgeport 5, Conn.

Speed Reducers, Gears

In this catalog, the information presented is intended to enable the machine designers, plant engineers and others concerned with power transmission to select the proper type and ratio of speed reducers for each power transmission job.—Catalog 55, 160 pages. Horsburgh & Scott Co., 5114 Hamilton Ave., Cleveland 14, O.

Furnaces

"Ajax Cataract Quench Furnaces for Austempering and Martempering" describes a new type electric salt bath furnace. Ajax Electric Co., Frankford Ave. at Delaware Ave., Philadelphia 23, Pa.

Pumps

The application of this company's vertical pumps for liquid transfer from short settings in industrial and process services is illustrated and described—Bulletin B-505, 16 pages. Peerless Pump Div., Food Machinery & Chemical Corp., 301 West Ave. 26, Los Angeles 31, Calif.

Welding

Volume XI, No. 4, *Arc Welding News* contains articles and photographs on welding from all over North America—16 pages. Hobart Brothers Co., Troy, O.

X-ray Generator

Details on the Van de Graaff x-ray generator (Model JR, 1 million volts) for industrial radiography are offered—Bulletin JR, 5 pages. High Voltage Engineering Corp., 7 University Rd., Cambridge 38, Mass.

Re-usable Containers

The advantages gained by packaging, storing and shipping industrial materials in re-usable metal containers are explained—Technical brochure No. 601, 16 pages. Peters-Dalton Inc., 17900 Ryan Rd., Detroit 12, Mich.

Electrolizing

Reducing friction and increasing wear-part life is covered in "Elec-

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Crowded isles and sluggish flow of materials cost you money. So why not go over the top! You can speed production, cut your costs with Conco Cranes, custom designed for your specific needs. Let us show you how. Write for a trained Conco engineer to call and make recommendations, or request bulletin 3000A covering our complete Conco line. Conco Cranes are backed by 37 years of experience.

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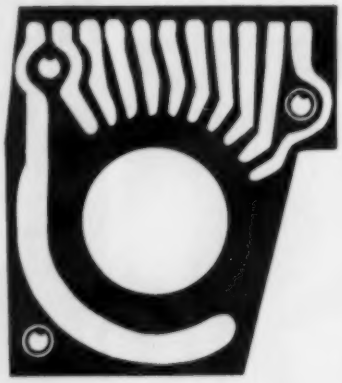
is more precisely compounded and free of flaws. Used increasingly for printed circuits (as pictured at right) in the electronics field, for sheet metal work, and for general soldering everywhere in industry. Called CASTOMATIC® solder, it is made on patented machines, by Federated only. Write for 36-page "Solder" brochure.

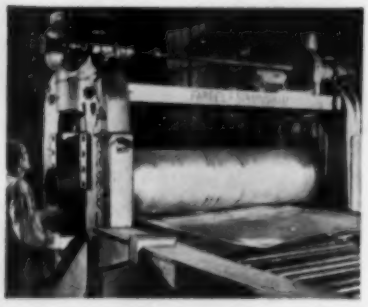


. . . zinc dust for the chemical industry

is an effective chemical reducing agent; yields salable by-products; costs less than other reducing agents. It is also used in paints which protect against corrosion.

. . . sheet lead for radiation protection

is used in the new Deep Therapy room of Seattle's Swedish Hospital. Federated supplied metallurgical help and all the lead. Through Federated, American industry has access to the acknowledged center of lead research and technical service. Ask for 48-page "Lead Handbook".



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NEW LITERATURE

trolizing, How It Increases Life and Efficiency of Parts Subjected to Wear, Abrasion and Corrosion"—17 pages. Electrolizing Corp., 1505 E. End Ave., Chicago Heights, Ill.

Packing Data

"Houghton Packings for Steel Mills" covers the types of packings used for many hydraulic and pneumatic installations in the steel industry. "Houghton and the Steel Industry" contains data on lubricants, packings, belting and metalworking products (specialty products). E. F. Houghton & Co., 303 W. Lehigh Ave., Philadelphia 33, Pa.

Refractories

"Boiler Refractories" discusses the importance of selecting the proper refractory materials and basic requirements they must meet to avoid the chief causes of refractory failure —bulletin R-36, 20 pages. Babcock & Wilcox Co., Refractories Div., 161 E. 42nd St., New York 17, N. Y.

EDITORIAL REPRINTS:

Write Readers' Service, STEEL, Penton Bldg., Cleveland 13, O.

Blast Furnace

Part III says that a substitution of 5 to 8 per cent of magnesium for lime in slag improves desulphurization of iron. Also, larger quantities cause increased coke rate, slag volumes and lower output, p. 82.

Annual Meetings

Progressive companies are revitalizing this approach to good stockholder relations by preparing more interesting and informative programs. How do you do it? See p. 46.

Extrusion

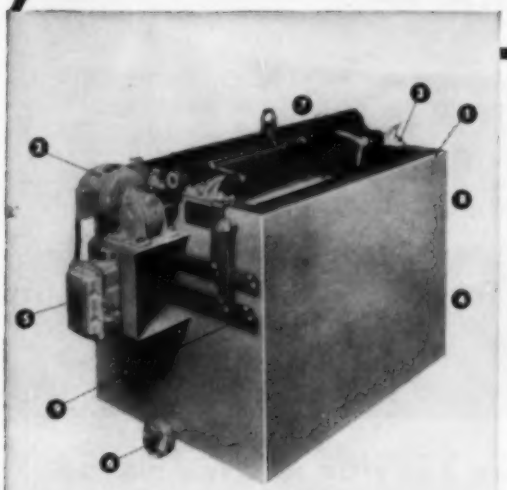
There are new vistas in extruded shapes, says the article on p. 78. J&L's new hot extrusion shop is ready to tackle shapes that were impossible yesterday.

How To Collect

Collections are not a serious problem in metalworking, but they are a headache and could become a migraine, if business slips. But you can make marginal credit accounts good business. How? See p. 52.

this improved H-VW-M
MERCIL-TYPE PLATING TANK
with SUBMERGED CYLINDER

plates faster
reduces maintenance cost
permits larger loads

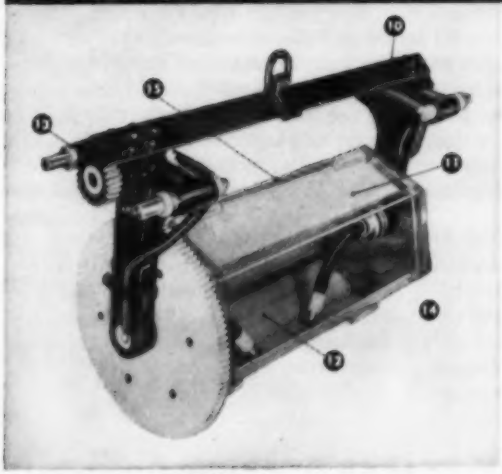


by combining *all* these features for better barrel plating:

1. **TURNED-IN FLANGES**—save space, provide enclosure for hanging heating and cooling coils.
2. **RELOCATED, MORE COMPACT MOTOR DRIVE**—drive shaft *now* above solution level, preventing leakage through shaft openings in tank walls.
3. **REDESIGNED SADDLES**—make barrel positioning far easier.
4. **NO OVERFLOW TROUGH**—not essential with this improved design, saves space inside tank.
5. **PUSH-BUTTON TYPE MOTOR STARTER**
6. **BOTTOM DRAIN**
7. **COIL RISERS**—extending over top of tank.
8. **ANODE RODS**—2 for each cylinder on both single and multiple units.
9. **BUS BARS**—positive and negative on *each* end of tank for equal current distribution.

These *improved* tanks are constructed of ¼" double-welded steel plate in 2 sizes, 14" x 30" I. D. (224 gal.) and 14" x 36" I. D. (252 gal.). For acid solutions, tanks are lined with ⅛" vulcanized rubber or plasticized PVC. For cyanide solutions, rough-wire glass is used in back of anodes. Finish is rust-resistant grey enamel with black trim.

TOGETHER, *They Form the Ideal Combination for Better Barrel Plating!*



10. **IMPROVED HANGER ASSEMBLY**—now made of rigid angle-iron, improved to insure proper barrel alignment.
11. **ONE-PIECE PANELS**—Plexiglas: ½" thick, no ribs. Melamine: ¼" thick, ribbed.
12. **CONVEX TUMBLING SURFACES (Plexiglas only)**—for added strength, easier tumbling action.
13. **MELAMINE BUSHINGS**—for insulating bronze hanger pins.
14. **EASY LOADING & UNLOADING**—cover with handle in panel area is easily reached at all times.
15. **SECURE BONDING**—all molded parts firmly bonded with cement and monel screws.

These *improved* cylinders are available in either Plexiglas, for temp. to 180°F., or Melamine, for temp. of 200-210°F. (Melamine has excellent resistance to abrasion). Hexagonal in shape, with 1" thick heads and special convex (Plexiglas only) one-piece panels, they are designed for greatly reduced maintenance cost and engineered for use *completely submerged* . . . with outstanding results: more consistent plating, 20% higher load capacities, 25% faster plating. And, in zinc baths, total submersion minimizes chance of spark igniting gas above bath.

For complete information on improved H-VW-M Mercil-Type Tanks and Cylinders ask for Bulletin PB 109.

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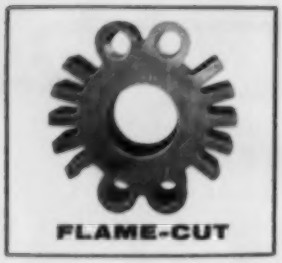

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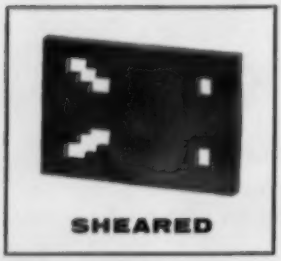

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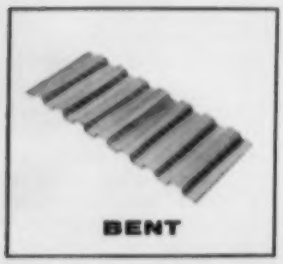

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If you would like to find out how to put this Service to work, write on your letterhead for Bulletin 712. Address: By-Products Steel Co., 742 Strode Avenue, Coatesville, Pennsylvania.

STEEL PLATE SHAPES SERVICE

BY-PRODUCTS STEEL CO.

A Division of Lukens Steel Company, Coatesville, Pennsylvania

Market Outlook

A HEALTHFUL PICKUP is taking place in steel demand. It's the kind of product—not the volume—that's important.

Until now, the bulk of the increase in demand for steel has been in the light, flat-rolled forms, such as cold-rolled carbon sheets. They've been stimulated by the production push of the automobile industry.

FANNING OUT— Today, demand for some of the other forms of steel is reviving. Feeling the improvement are makers of plates, bars, pipe and merchant wire. This is good: It signifies that business is strengthening on a widening front. And it gives the steel industry assurance of business support from products other than the light, flat-rolled goods.

Some of the pickup is seasonal, but that is good, too. Seasonal upturns in some products help offset seasonal declines in others. If the big automotive industry has a seasonal downturn during the coming summer, the steel industry will be glad to see seasonal strength in others, such as construction.

GETTING BUSY— It's one of the segments of construction that is giving strength to demand for plates. The builders of pipelines are getting ready to dig again, and to supply them the McKeesport, Pa., mill of U. S. Steel Corp.'s National Tube Division is stepping up its work of welding plates into the line pipe.

STRETCH-OUT— A gage of the tempo of demand for plates is Inland Steel Co.'s steel availability list. That Chicago area producer lengthened delivery promises on sheared and universal mill plates again. Within the latest week, Inland stretched its deliveries of sheared plates two weeks and universal plates one week. Now it takes six weeks to get the sheared product and five weeks to get u.m. plates. Less than a month ago, promises were two weeks on sheared plates and three to four weeks on universal plates.

Increased orders for steel pipe have boosted the production rate at Wheeling Steel Corp.'s Benwood, W. Va., Works. Two continuous weld furnaces and a skelp mill there went from a three-day to a five-day production rate.

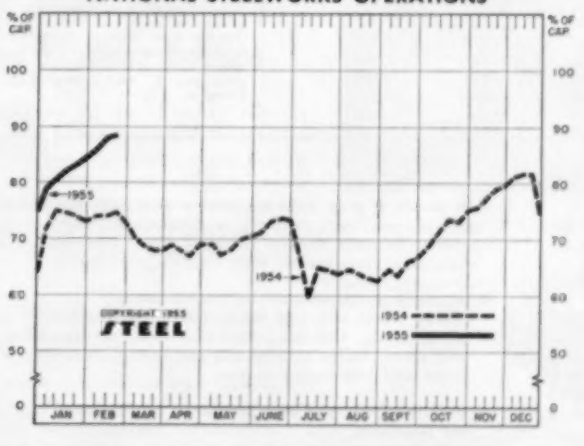
BUSIER— Seasonal upturn in construction is livening inquiries for structural shapes, too. Estimating departments at some fabricating shops are finding it difficult to keep up with demand. As their order backlogs expand, fabricators are becoming selective in their bidding.

The broadening demand for steel is reducing the opportunity to get carbon bars from stock or from immediate rollings.

STEP-UP— Steel production is responding to the widening demand. In the week ended Feb. 20, output of steel for ingots and castings rose half a point over the preceding week and reached 88.5 per cent of capacity. This gives a yield of 2,135,750 net tons, largest since October, 1953. At some mills and in some districts, steel production exceeds theoretical capacity.

PRICES— The rise in steel output is not carrying steelmaking scrap prices up with it. STEEL's price composite on scrap fell to $36.17 a gross ton from the preceding week's $36.33. STEEL's price composite on finished steel remains at $117.82 a net ton.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

(Percentage of capacity engaged)

	Week Ended Feb. 20	Change	Same Week 1954	Same Week 1953
Pittsburgh	87	+ 3*	85.5	105.5
Chicago	91.5	+ 0.5	85.5	103.5
Mid-Atlantic	86	+ 1	74	95
Youngstown	90	+ 1	70	106
Wheeling	94	— 1.5	76	100.5
Cleveland	92.5	— 2.5*	78	106
Buffalo	100	0	73	106.5
Birmingham	85.5	+ 6.5	80	97
New England	88	+ 9	65	89
Cincinnati	88	— 2.5	74.5	99
St. Louis	102.5	+ 16	35.5	93.5
Detroit	88	+ 3.5	72	100
Western	88	+ 1	79	110
National Rate	88.5	+ 0.5	74.5	100

INGOT PRODUCTION‡

	Week Ended Feb. 20	Week Ago	Month Ago	Year Ago
INDEX (1947-1949=100)	122.9†	120.4	125.9	110.7
NET TONS (In thousands)	2,129†	2,096	2,008	1,779

*Change from preceding week's revised rate. †Estimated. ‡Amer. Iron & Steel Institute. Weekly capacity (net tons): 2,413,278 in 1955; 2,384,549 in 1954; 2,254,459 in 1953.

Metalworking Outlook—p. 35 Technical Outlook—p. 73

Price Indexes and Composites

FINISHED STEEL PRICE INDEX (Bureau of Labor Statistics)

	Feb. 15 1955	Feb. 8 1955	Month Ago	Jan. Average
(1947-1949=100)	144.7	144.7	144.7	144.6

AVERAGE PRICES OF STEEL (Bureau of Labor Statistics)

Week Ended Feb. 15

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them write to STEEL.

Rails, standard, No. 1	$4.535
Rails, light, 40 lb	5.917
Tie Plates	5.275
Axles, railway	7.500
Wheels, freight car, 33 in. (per wheel)	43.500
Plates, carbon	4.675
Structural Shapes	4.617
Bars, tool steel, carbon (lb)	0.430
Bars, tool steel, alloy, oil hardening die (lb)	0.525
Bars, tool steel, H.R., alloy, high speed W 6.75, Cr 4.5, V 2.1, Mo 5.5, C 0.060 (lb)	1.115
Bars, tool steel, H.R., alloy, high speed W 18, Cr 4, V 1 (lb)	1.610
Bars, H.R., alloy	5.575
Bars, H.R., stainless, 303 (lb)	0.423
Bars, H.R., carbon	5.000
Bars, reinforcing	4.963
Bars, C.F., carbon	5.160
Bars, C.F., alloy	11.375
Bars, C.F., Stainless, 302 (lb)	0.438
Sheets, H.R., carbon	4.870
Sheets, C.R., carbon	5.564
Sheets, galvanized	7.220
Sheets, C.R., stainless, 302 (lb)	0.553
Sheets, electrical	$9.350
Strip, C.R., carbon	7.493
Strip, C.R., stainless, 430 (lb)	0.415
Strip, H.R., carbon	5.113
Pipe, black, buttweld (100 ft)	15.000
Pipe, galv. buttweld (100 ft)	18.608
Pipe, line (100 ft)	146.804
Casing, oil well, carbon (100 ft)	154.216
Casing, oil well, alloy (100 ft)	227.878
Tubes, boiler (100 ft)	†
Tubing, mechanical, carbon	†
Tubing, mechanical, stainless, 304 (100 ft)	161.193
Tin plate, hot-dipped, 1.25 lb	8.533
Tin plate, electrolytic, 0.25 lb	7.233
Black plate, can making quality	6.333
Wire, drawn, carbon	7.938
Wire, drawn, stainless, 430 (lb)	0.545
Bale ties (bundle)	5.850
Nails, wire, 6d common	7.815
Wire, barbed (80-rod spool)	7.097
Woven wire fence (20-rod roll)	16.815

† Not available.

STEEL's FINISHED STEEL PRICE INDEX*

	Feb. 16 1955	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Index (1935-39 av.=100)	194.53	194.53	194.53	189.74	156.13
Index in cents per lb	5.370	5.370	5.370	5.140	4.220

STEEL'S ARITHMETICAL PRICE COMPOSITES

Finished Steel, NT*	$117.82	$117.82	$117.82	$113.91	$93.00
No. 2 Fdry, Pig Iron, GT	56.54	56.54	56.54	56.54	46.47
Basic Pig Iron, GT	56.04	56.04	56.04	56.04	45.97
Malleable Pig Iron, GT	57.27	57.27	57.27	57.27	47.27
Steelmaking Scrap, GT	36.17	36.33	34.75	26.83	27.67

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 84; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED STEEL	Feb. 16 1955	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bars, H.R., Pittsburgh	4.30	4.30	4.30	4.15	3.45
Bars, H.R., Chicago	4.30	4.30	4.30	4.15	3.45
Bars, H.R., deld. Philadelphia	4.55	4.55	4.55	5.303	3.93
Bars, C.F., Pittsburgh	5.40	5.40	5.40	5.20	4.10-4.15
Shapes, Std., Pittsburgh	4.25	4.25	4.25	4.10	3.40
Shapes, Std., Chicago	4.25	4.25	4.25	4.10	3.40
Shapes, deld. Philadelphia	4.53	4.53	4.53	4.38	3.42
Plates, Pittsburgh	4.225	4.225	4.225	4.10	3.80
Plates, Chicago	4.225	4.225	4.225	4.10	3.80
Plates, Coatesville, Pa.	4.225	4.225	4.225	4.10	3.80
Plates, Sparrows Point, Md.	4.225	4.225	4.225	4.10	3.80
Plates, Claymont, Del.	4.225	4.225	4.225	4.10	3.60
Sheets, H.R., Pittsburgh	4.05	4.05	4.05	3.925	3.35
Sheets, H.R., Chicago	4.05	4.05	4.05	3.925	3.35
Sheets, C.R., Pittsburgh	4.95	4.95	4.95	4.775	4.10
Sheets, C.R., Chicago	4.95	4.95	4.95	4.775	4.10
Sheets, C.R., Detroit	5.10	5.10	5.10	4.975	4.30
Sheets, Galv., Pittsburgh	5.45	5.45	5.45	5.275	4.40
Strip, H.R., Pitts.	4.05	4.05	4.05	4.425	3.25
Strip, H.R., Chicago	4.05	4.05	4.05	3.925	3.25
Strip, C.R., Pittsburgh	5.75	5.75	5.75	5.45	4.15
Strip, C.R., Chicago	5.85	5.85	5.85	5.70	4.30
Strip, C.R., Detroit	5.90	5.90	5.90	5.45-6.05	4.35-.40
Wire, Basic, Pitts.	5.75	5.75	5.75	5.525	4.50
Nails, Wire, Pittsburgh	6.85	6.85	6.85	6.85	5.20
Tin plate (1.50 lb), box, Pitts.	$9.05	$9.05	$9.05	$8.95	$7.50
SEMIFINISHED STEEL					
Billets, forging, Pitts. (NT)	$78.00	$78.00	$78.00	$75.50	$63.00
Wire rods, $\frac{7}{32}$-$\frac{9}{16}$" Pitts.	4.675	4.675	4.675	4.525	3.85
PIG IRON, Gross Ton					
Bessemer, Pitts.	$57.00	$57.00	$57.00	$57.00	$47.00
Basic, Valley	56.00	56.00	56.00	56.00	46.00
Basic, deld. Phila.	59.66	59.66	59.66	59.66	49.44
No. 2 Fdry, Pitts.	56.50	56.50	56.50	56.50	46.50
No. 2 Fdry, Chicago	56.50	56.50	56.50	56.50	46.50
No. 2 Fdry, Valley	56.50	56.50	56.50	56.50	46.50
No. 2 Fdry, deld. Phila.	55.16	55.16	55.16	60.16	49.94
No. 2 Fdry, Birm.	52.88	52.88	52.88	52.88	42.38
No. 2 Fdry (Birm.) deld. Cin.	60.58	60.58	60.58	60.43	49.08
Malleable, Valley	56.50	56.50	56.50	56.50	46.50
Malleable, Chicago	56.50	56.50	56.50	56.50	46.50
Ferromanganese, Duquesne	190.00†	190.00†	190.00†	200.00†	175.00*

*75-82% Mn, gross ton, Etna, Pa. †74-76% Mn, net ton.

SCRAP, Gross Ton (Including broker's commission)

No. 1 Heavy Melt, Pitts.	$36.50	$38.00	$36.50	$29.50	$32.00
No. 1 heavy Melt, E. Pa.	38.00	37.00	33.50	25.00	23.50
No. 1 Heavy Melt, Chicago	34.00	34.00	35.00	27.00	27.50
No. 1 Heavy Melt, Valley	36.50	36.50	36.50	25.50	31.25
No. 1 Heavy Melt, Cleve.	34.00	34.00	33.50	23.50	28.25
No. 1 Heavy Melt, Buffalo	32.00	32.50	30.50	25.00	27.75
Rails, Rerolling, Chicago	49.50	49.50	53.00	36.50	40.50
No. 1 Cast, Chicago	40.00	40.00	40.00	29.50	40.50
COKE, Net Ton					
Beehive, Furn, Connisvl.	$13.75	$13.75	$13.75	$14.75	$13.25
Beehive, Fdry, Connisvl.	16.75	16.75	16.75	16.75	15.50
Oven Fdry, Chicago	24.50	24.50	24.50	24.50	21.00

Daily Nonferrous Price Record

	Price Feb. 16	Last Change	Previous Price	Jan. Avg.	Dec. Avg.	Feb. 1954 Avg.
Copper	33.00	Jan. 28, 1955	30.00	$0.180	$0.000	29.750
Lead	14.80	Oct. 4, 1954	14.55	14.800	14.800	12.610
Zinc	11.50	Sept. 3, 1954	11.00	11.500	11.500	9.340
Tin	90.00	Feb. 16, 1955	90.125	87.280	86.649	85.181
Nickel	84.50	Nov. 24, 1954	80.00	84.500	84.500	80.000
Aluminum	23.20	Jan. 12, 1955	22.20	22.900	22.200	21.500
Magnesium	27.00	Mar. 9, 1953	24.50	27.000	27.000	27.000

Quotations in cents per pound based on: Copper, deld. Conn. Valley; Lead, common grade, deld. St. Louis; Zinc, prime western, E. St. Louis; Tin, Straits, deld. New York; Nickel, electrolytic cathodes, 99.9%, base size at refinery unpacked; Aluminum, primary ingots, 99+%, deld.; Magnesium 99.8%, Freeport, Tex.

What You Can Use the Markets Section for:

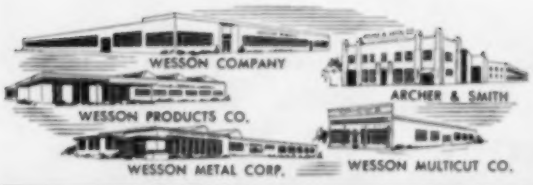
- **A source of price information.**
  Current prices are reported each week. Price changes are shown in italics. Price trends are shown in tables of indexes and comparisons.

- **A directory of producing points.**
  Want to know who makes something, or where it is made? The steel price tables alphabetically list the cities of production and indicate the producing company. If you are a buyer, you may want to make a map showing comparative distances of sources of supply and to help you compute freight costs. If you are a seller of supplies you can make a map to spot your sales possibilities.

- **A source of price data for making your own comparisons.**
  Maybe you want to keep a continuous record of price spread between various forms of steel. You can get your base price information from STEEL's price tables.

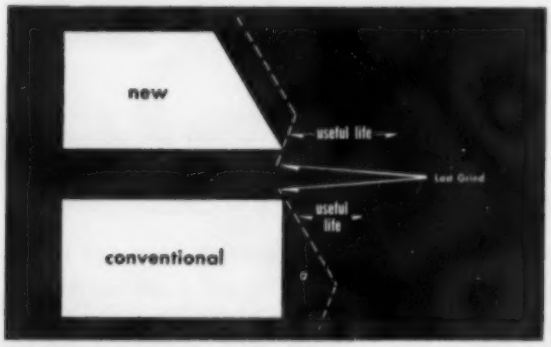
- **A source of information on market trends.**
  Newsy items tell you about the supply-demand situation of materials, including iron and steel, nonferrous metals and scrap. Other articles analyze special situations of interest and importance to you.

- **Reports on iron and steel production, and materials and product shipments.**



carbide NEWS

Carbide Tip Waste Cut 30%



Wesson milling cutter blade design has base parallel with peripheral cutting edge; permits more regrinds per blade

Reduction in carbide waste is assured by the new milling cutter blade, at top, since base of carbide tip parallels the peripheral cutting edge. Conventional blade is shown below.

A new carbide-tipped milling cutter blade design now incorporated into the Wesson Rigidicut milling cutter line is producing an increase of 30% or more in blade life.

Tipped with Wessonmetal carbides, the new blade permits maximum carbide usage and enables many more regrinds per blade.

The new blade design is compared with old style blades in the sketch at the left. In the new blade, the base of the carbide tip is parallel with the peripheral cutting edge, eliminating waste.

Because of the success of the new design in extensive field application tests, it is now standard in most Rigidicut cutters in the fine pitch and coarse pitch series. Additional economy results since these blades are being made available at no increase in price.

Complete engineering data and price information on the entire Rigidicut milling cutter series is available from Wesson Company, Dept. AD, 1220 Woodward Heights Blvd., Detroit 20, Michigan.

Wesson Metal Now In Top 3

With the official opening recently of a new and modern carbide plant in Lexington, Ky., Wesson Metal Corporation entered the ranks of the three largest carbide manufacturers in this country. A model of scientific design, the new Wessonmetal plant occupies over 40,000 square feet of manufacturing space.

In the new plant, greatly expanded research and development facilities will highlight continued development of new carbide metal-cutting grades. The company's quality control laboratories contain some of the most advanced scientific equipment available.

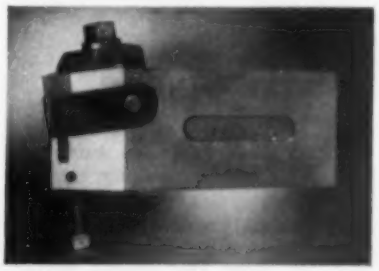
The new plant, which houses some entirely new manufacturing and quality control developments, will more than double the productive capacity of previous facilities. Working at virtually full capacity already, the new plant is keeping pace with wide-spread demand for the complete line of Wessonmetal carbides.

A substantial portion of the plant's capacity is being devoted to output of the latest Wessonmetal development in steel cutting grades. The new steel cutting grade promises to be the most significant carbide development since the introduction of steel cutting carbides.

New Multicut Holder Gets Peak Efficiency From Fischer Lathes

Popularity of the Fischer copying lathe springboarded the development of a special band-type Multicut tool holder. Coupled with the steel band used on all Multicut holders is a new top clamp that assures rigidity of insert when the tool is recessing or going through the out-facing cycle.

Combination of band and clamp permits closer tolerances and finer finishes in the complete range of Fischer lathe applications. Finish turning is eliminated in many operations. The holder uses standard Wessonmetal D-55 inserts.



Closer tolerances and finer finishes result from band and clamp used in Multicut holder.

CARBIDE DATA

Additional information and specifications available:

- ☐ 121 page catalog covering complete standard and special Rigidicut milling cutter and blade line.
- ☐ Specification-Data Sheet on special Multicut holder.

Get data by writing to:
WESSON COMPANY, Dept. AD,
1220 Woodward Heights Blvd.
Detroit 20, Michigan

tools Wesson carbide Wessonmetal

Nonferrous Metals

Records fall fast in aluminum industry. Production may run at 100 per cent until early summer. New uses spark phenomenal growth as industry seeks its level

Nonferrous Metal Prices, Pages 118 & 119

ALUMINUM is going like a house on fire on a windy day. Primary production set a new record and product shipments are putting the pressure on another high mark. In fact, no record is safe in this growing industry.

Some metals men say there is no need to worry about cutthroat competition from one metal or another because they all, in time, will find their own levels. Aluminum is still searching for its level. Primary production in December, 1954, hit 254,112,883 lb, bettering the previous high of about 252.3 million lb last July. January was just as good as December, maybe better. February and March operations will be at 100 per cent of capacity. In fact, there seems to be no letup in sight until possibly early summer, and then it won't be much.

New Shipments Record?—January will probably be the fourth month in a row to see aluminum products shipments better the previous month. The Aluminum Association reports practically all categories of products made advances in December. The Bureau of the Census totaled December shipments of all products at 195,571,000 lb, above November by about 15.8 million lb. Another increase like that and the record in April, 1953, would be in jeopardy.

There are many reasons for this phenomenal growth. Hardly a day goes by that someone doesn't find a new use for aluminum. This development, in turn, puts the pressure on the mills and the primary producers. That pressure has been showing up in numerous expansions. Kaiser Aluminum & Chemical Corp. let a contract for site preparation of the multimillion-dollar sheet and foil rolling mill at Ravenswood, W. Va. Reynolds Metals Co. is going to construct a new mill in the Pacific Northwest. Aluminum Co. of America is putting in a new rolling mill at Davenport, Iowa. American Brass Co. is getting ready to build a mill in Terre Haute, Ind. Anaconda Copper Mining Co. is completing its reduction plant at Columbia Falls, Mont. Aluminum Co. of Canada will add another smelter at its Kitimat, B. C., project. And so it goes.

Bright Stars—One of the brightest segments of the industry is foil, which set new records in 1954. Its many new uses have prompted the entry into the field of Revere Copper & Brass Corp. But foil is not the only star. Castings and forgings are making a big play for the automotive market. Kaiser Aluminum estimates that in 1954 the average use per car was 11.4 lb, and that may be doubled this year. The potential is great. If aluminum were used in every part now considered feasible, Kaiser estimates there would be about 469 lb of the metal in every new car. On 5 million cars that would amount to 2345 million lb a year.

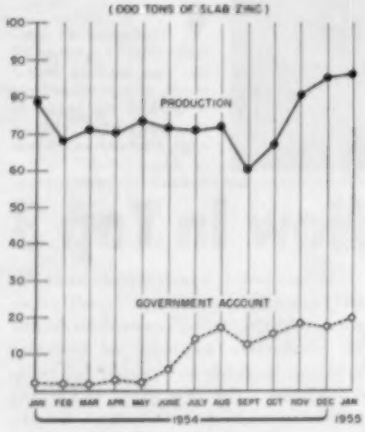
Another heavy potential is in highway construction. The Ohio turnpike is using about 40 miles of aluminum highway railing. Many of the lights along such highways and city streets will be on aluminum poles. Long stretches of limited-access highways are already dotted with aluminum telephone booths.

Relax with Aluminum—The trend to more relaxing hours has helped, too. Reynolds expects to rack up sales of 3.5 million to 4 million lb of "do-it-yourself" aluminum in 1955. Aluminum boats are making a big splash at water resorts.

Meantime, the supply of the metal is feeling the pinch. There is no shortage as such, but some producers are allocating the metal. Inventories are generally low, which aggravates the situation.

Help Coming—But there is immediate help in sight. Moderate rainfall in the Tennessee valley has made it possible for Alcoa to continue its operations at Alcoa, Tenn., although there is still a water shortage in the area. Also, foreign pressure should decrease a bit as Kitimat gets back in production after a shutdown due to a power-line break. In any case, the government does not consider the situation grave enough to give way to demands that stockpile deliveries be postponed.

GOVERNMENT STOCKPILE: Spur to Zinc Production



Source: American Zinc Institute Inc.

Zinc Production Advances Again

American Zinc Institute Inc. reports that production of slab zinc in January reached a new high as the government continued to take the industry's excess metal in the stockpile program (see chart). The net result was that stocks at the smelters dipped again, reaching 117,181 tons. This was the eighth straight month that stocks declined, dating back to June, the first month in which the government took any sizable amount off producers' hands. Production in January was 86,106 tons; government delivery was 19,695 tons. Encouraging is the demand for the metal, which resulted in reduction of zinc offered the government for stockpile on Feb. 11. The pattern of demand continues to be for more high-grade zinc, although prime western is still kingpin. However, stocks at the smelters are holding at about the two-month level in the latter while special high grade is less than one month's production.

Third Plant for American Brass

American Brass Co. has announced construction plans for three new plants in about as many weeks. First was the aluminum mill at Terre Haute, Ind.; then came the flexible metal hose and tubing plant at Mattoon, Ill.; now it's a new brass mill in the Paramount district of Los Angeles. This last one will involve expenditure of about $13 million, bringing the total for all three to about $40 million. The Los Angeles mill will put out copper and copper-base alloys in the form of sheet, strip, rod, tubing and drawn copper products.

for faster,
cleaner, sounder welds use
CRUCIBLE STAINLESS ELECTRODES...

You're *sure* of fast deposition, uniform quality welds, with Crucible stainless steel electrodes. For Crucible pioneered in the *development* of stainless electrodes . . . and its welding engineers have a wealth of manufacturing and application experience for you to draw upon.

And you'll find a complete assortment of Crucible stainless bare welding rods and coated electrodes for both AC and DC welding . . . including special high carbon corrosion- and heat-resisting electrodes . . . armorize electrodes for armor plate welding . . . and electrodes for cast iron welding.

Whatever your application . . . whatever welding procedure you use . . . there is a Crucible stainless welding wire or electrode for the job. You'll get them *fast* from your nearest Crucible warehouse or welding equipment distributor. *Crucible Steel Company of America, Henry W. Oliver Building, Pittsburgh 30, Pa.*

CRUCIBLE first name in special purpose steels

Crucible Steel Company of America

Nonferrous Metals

Cents per pound, carlots, except as otherwise noted

PRIMARY METALS AND ALLOYS

Aluminum: 99 + %, ingots 23.20, pigs 21.50 10,000 lb or more, f.o.b. shipping point. Freight allowed on 500 lb or more.

Aluminum Alloy: No. 13, 12% Si, 25.00; No. 43, 5% Si, 24.8; No. 142, 4% Cu, 1.5% Mg, 2% Ni, 26.2; No. 195, 4.5% Cu, 0.8% Si, 25.5; No. 214, 3.8% Mg, 26.2; No. 356, 7% Si, 0.3% Mg, 24.9.

Antimony: R.M.M. brand, 99.5% 28.50, Lone Star brand, 29.00, f.o.b. Laredo, Tex., in bulk. Foreign brands, 99.5%, 27.00-28.00 New York, duty paid, 10,000 lb or more.

Beryllium: 97%, lump or beads, $71.50 per lb f.o.b. Cleveland or Reading, Pa.

Beryllium Aluminum: 5% Be, $72.75 per lb of contained Be, f.o.b. Reading, Pa.; Elmore, O.

Beryllium Copper: 3.75-4.25% Be, $40.00 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. Reading, Pa. or Elmore, O.

Bismuth: $2.25 per lb, ton lots.

Cadmium: Sticks and bars, $1.70 per lb deld.

Cobalt: 97-99%, $2.60 per lb for 550 lb keg; $2.62 per lb for 100 lb case; $2.67 per lb under 100 lb.

Columbium: Powder, $118.30 per lb, nom.

Copper: Electrolytic 33.00 deld. Conn. Valley, 33.00 deld. Midwest; Lake 33.00 deld; Fire refined 32.75 deld.

Germanium: 99.9%, $294.84 per lb, nom.

Gold: U. S. Treasury, $35 per oz.

Indium: 99.9%, $2.25 per troy oz.

Iridium: $130-$135 nom. per troy oz.

Lead: Common 14.80, chemical 14.90, corroding 14.90, St. Louis; N. Y. basis, add 0.20.

Lithium: 99%, $11-$14 per lb, depending on quantity.

Magnesium: 99.8%, self-palletizing pig 27.00; notched ingot 27.75, 10,000 lb or more, f.o.b. Freeport, Tex. For Port Newark, N. J., and Madison, Ill., add 1.20 for pig and 1.25 for ingot. Sticks 1.5 in. diameter, 46.00, 100 to 4999 lb, f.o.b. Madison, Ill.

Magnesium Alloys: AZ91C and alloys C, H, G and R 32.80; alloy M 34.50, 10,000 lb or more, f.o.b. Freeport, Tex., or Madison, Ill. Add 1.20 for Port Newark, N. J.

Mercury: Open market, spot, New York, $322-$327, per 76-lb flask.

Molybdenum: Powder 99% hydrogen reduced $3-$3.23 per lb; pressed ingot $4.06 per lb; sintered ingot $5.53 per lb.

Nickel: Electrolytic cathodes, sheets (4 x 4 in. and larger), unpacked 64.50; 10-lb pigs, unpacked 67.66; "XX" nickel shot 69.00; "F" nickel shot or ingots for addition to cast iron, 64.50; prices f.o.b. Port Colborne, Ont., including import duty. New York basis, add 0.92.

Osmium: $120-$140 nom. per troy oz.

Palladium: $17-$21 per troy oz.

Platinum: $76-$80 per troy oz from refineries.

Radium: $16-$21.50 per mg radium content, depending on quantity.

Rhodium: $120-$125 per troy oz.

Ruthenium: $60-$65 per troy oz.

Selenium: 99.5%, $6-$7.25 per lb.

Silver: Open market, 85.25 per oz.

Sodium: 16.50, carlots; 17.00 l.c.l.

Tantalum: Sheet, rod $65.70 per lb; powder $40.20 per lb.

Tellurium: $1.75 per lb.

Thallium: $12.50 per lb.

Tin: Straits, N. Y., spot 90.00, prompt 90.00.

Titanium: Sponge, 99.3+ %, grade A-1 ductile (0.3% Fe max) $4.50, grade A-2 (0.5% Fe max) $4 per pound.

Tungsten: Powder, 98.8%, carbon reduced, 1000 lb lots $4.00 per lb nom., f.o.b. shipping point; less than 1000 lb add 15.0; 99+% hydrogen reduced, $4.65. Treated ingots $6.70.

Zinc: Prime Western 11.50, brass special 11.75, intermediate 12.00, E. St. Louis, freight allowed over 0.50 per pound. High grade 12.85, special high grade 13.00, die casting alloy ingot 15.50, deld.

Zirconium: Sponge $10 per lb; powder electronics grade $15, flash grade $11.50. (Note: Chromium, manganese and silicon metals are listed in ferroalloy section.)

SECONDARY METALS AND ALLOYS

Aluminum Ingot: Piston alloy 26.50-27.50; No. 12 foundry alloy (No. 2 grade) 26.50-27.25; 5% silicon alloy, 0.60 Cu max., 27.25-27.75; 13 alloy 0.60 Cu max., 27.75-28.75; 195 alloy 27.75-28.25; 108 alloy 27.00-28.00; steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 27.25-28.25; grade 2, 26.25-27.25; grade 3, 25.50-26.50; grade 4, 26.25-26.75.

Brass Ingot: Red brass No. 115, 33.00; tin bronze No. 225, 43.50; No. 245, 37.75; high-leaded tin bronze, No. 305, 37.00; No. 1 yellow, No. 405, 28.75; manganese bronze No. 421, 36.75.

Magnesium Alloy Ingot: AZ63A, 31.00; AZ91B, 26.00; AZ91C, 31.00; AZ92A, 31.00.

NONFERROUS MILL PRODUCTS

BERYLLIUM COPPER

(Base prices per lb, plus mill extras 2000 to 5000 lb, f.o.b. Temple, Pa.; nominal 1.9% Be alloy) Strip, $1.71; rod, bar, wire, $1.68.

COPPER WIRE

Bare, soft, f.o.b. eastern mills, 100,000 lb lots, 38.35; 30,000 lb lots, 38.48; l.c.l. 38.98. Weatherproof, 100,000 lb, 38.53; 30,000 lb, 38.78; l.c.l. 39.28. Magnet wire deld., 15,000 lb or more 44.99; l.c.l. 45.74.

LEAD

(Prices to jobbers f.o.b. Buffalo, Cleveland, Pittsburgh) Sheets, full rolls, 140 sq ft or more $30.00 per cwt; pipe, full coils $30.00 per cwt; traps and bends, list prices plus 30%.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill) Sheets, $15; sheared mill plate, $12; strip, $15; wire, $11; forging billets $9; hot-rolled and forged bars, $9.

ZINC

(Prices per lb c.l., f.o.b. mill) Sheets 23.00, ribbon zinc in coils, 19.00-20.50; plates 18.00-22.25.

ZIRCONIUM

Plate $27; H.R. strip $25; C.R. strip $35; forged or H.R. bars $27; wire, 0.015 in., 1 cent per linear foot.

NICKEL, MONEL, INCONEL

	"A" Nickel	Monel	Inconel
Sheet, C.R.	102	78	99
Strip, C.R.	102	87	125
Plate, H.R.	97	83	95
Rod, Shapes H.R.	87	69	93
Rod, Shapes C.R.	91	75	115
Seamless Tubes	122	108	153
Shot, Blocks		65	

ALUMINUM

Screw Machine Stock: 5000 lb and over.

Dia. (in.) or across flats	Round 2011-T3	Round 2017-T4	Hexagonal 2011-T3	Hexagonal 2017-T4
Drawn				
0.125	63.5	62.0		
0.156-0.172	53.9	52.3		
0.188	53.9	52.3		66.6
0.219-0.234	51.1	49.5		
0.250-0.281	51.1	49.5		63.7
0.313	51.1	49.5		60.6
Cold-finished				
0.375-0.547	49.9	47.5	59.8	57.2
0.563-0.688	49.9	47.5	56.9	53.7
0.750-1.000	48.7	46.3	52.1	50.6
1.063	48.7	46.3		48.9
1.125-1.500	46.9	44.6	50.4	48.9
Rolled				
1.563	45.7	43.4		
1.625-2.000	45.1	42.8		47.2
2.125-2.500	44.0	41.7		
2.563-3.375	42.7	40.5		

ALUMINUM

Sheets and Circles: 1100 and 3003 mill finish c.l. (30,000 lb base; freight allowed over 499 lb)

Thickness Range Inches	Flat Sheet	Flat Sheet Circles*	Coiled Sheet	Coiled Sheet Circles†
0.249-0.136	35.9	40.4	...	...
0.135-0.096	36.4	41.3	...	...
0.095-0.077	37.1	42.3	34.6	39.6
0.076-0.061	37.7	43.2	34.8	39.8
0.060-0.048	38.2	43.6	35.1	40.2
0.047-0.038	38.7	44.5	35.6	40.6
0.037-0.030	39.1	45.0	36.0	41.8
0.029-0.024	39.7	45.5	36.3	41.8
0.023-0.019	40.4	46.9	37.1	42.6
0.018-0.017	41.2	...	37.7	43.5
0.016-0.015	42.1	...	38.5	44.7
0.014	43.1	...	39.5	46.0
0.013-0.012	44.3	...	40.3	47.0
0.011	45.3	...	41.4	48.6
0.010-0.0095	46.5	...	42.5	50.2
0.009-0.0085	47.8	...	44.0	52.3
0.008-0.0075	49.4	...	45.3	54.1
0.007	50.9	...	46.7	56.4
0.006	52.5	...	48.1	61.4

*48 in. max. dia. †26 in. max. dia.

ALUMINUM

Plates and Circles: Thickness 0.250-3.0 in. 24-60 in. width or dia, 72-240 in. lengths.

Alloy	Plate Base	Circle Base
1100-F, 3003-F	34.6	38.8
5050-F	35.7	39.9
3004-F	36.7	41.6
5052-F	38.4	43.4
6061-T6	39.6	44.0
2024-T4*	41.8	47.9
7075-T6*	49.6	56.2

*24-48 in. widths or dia., 72-180 in. lengths

ALUMINUM

Forging Stock: Round, Class 1, 47.8-37.3, in specific lengths 36-144 in., diameters 0.375-8 in. Rectangles and squares, Class 1, 53.6-41 in random lengths 0.375-4.0 in. thick, widths 0.750-10 in.

Pipe: A.S.A. Schedule 40, alloy 6063-T6, 20 ft length, plain ends, 90,000 lb base, per 100 ft.

Nom. pipe Size, in.		Nom. pipe Size, in.	
⅜	$16.10	2	$ 49.55
1	25.35	4	136.65
1¼	34.30	6	244.90
1½	41.00	8	368.50

MAGNESIUM

Sheet: AZ31, commercial grade, 0.032-in. 94.00, 0.064-in. 73.00, 0.125-in. 60.00, 30,000 lb and over, f.o.b. mill.

Plate: Hot-rolled AZ31, 53.00, 20,000 lb or more 0.250-in. and over widths to 48 in., lengths to 144 in.; raised pattern floor plate, 59.00, 20,000 lb or more, ¼-in. thick, widths 24-72 in., lengths 60-192 in.

Extrusion Stock: AZ31, Rectangles, ¼ x 2 in. 69.20, 1 x 4 in. 63.00. Rod, 1 in. 66.00, 2 in. 62.50. Tubing, 1 in. OD x 0.065-in. 87.00. Angles, 1 x 1 x ⅛-in. 72.90, 2 x 2 x ¼-in. 67.00. Channels, 5 in. 67.80. I-Beams, 5 in. 66.20.

NONFERROUS SCRAP

DEALERS' BUYING PRICES

(Cents per pound, New York, in lots)

Aluminum: 1100 clippings 16.00; old sheet 13.00-13.50; borings and turnings 8.00-9.00; crankcases 13.00-13.50; industrial castings 13.00-13.50.

BRASS MILL PRICES

	MILL PRODUCTS a				SCRAP ALLOWANCES f		
	Sheet, Strip, Plate	Rod	Wire	Seamless Tube	Clean Heavy	Rod Ends	Clean Turnings
Copper	51.76b	49.36	....	51.53	30.000	30.000	28.250
Yellow Brass	44.27	44.21	44.81	47.18	21.875	21.625	20.125
Red Brass, 85%	46.44	48.36	48.96	51.35	25.500	25.250	24.750
Low Brass, 80%	47.35	47.29	47.89	50.15	24.625	24.375	23.875
Naval Brass	48.18	42.49	55.24	51.34	20.250	20.000	19.500
Com. Bronze, 90%	50.08	50.02	50.62	52.84	26.625	26.375	25.875
Nickel Silver, 10%	56.25	62.25	60.56	....	26.000	25.750	13.000
Phos. Bronze, A, 5%	70.12	70.62	70.62	71.60	29.375	29.125	28.125
Silicon Bronze	55.94	55.13	55.98	57.55c	28.000	27.750	27.000
Manganese Bronze	51.92	46.02	56.46	....	20.375	20.125	19.500
Muntz Metal	46.34	42.15	....	....	20.625	20.375	19.875

a. Cents per lb f.o.b. mill; freight allowed on 500 lb or more. b. Hot-rolled. c. Cold-drawn. d. Free cutting. e. 3% silicon. f. Prices in cents per lb for less than 20,000 pounds, f.o.b. shipping point. On lots over 20,000 lb at one time, of any or all kinds of scrap, add 1 cent per lb. g. Leaded.

Copper and Brass: Heavy copper and wire No. 1 29.50-30.00; No. 2 copper 28.00-28.50; light copper 26.00-26.50; No. 1 composition red brass 23.00-23.50; No. 1 composition turnings 22.50-23.00; yellow brass turnings 15.50; new brass clippings 21.00; No. 1 brass rod turnings 18.00; light brass 15.00; heavy yellow brass 18.00-18.50; new brass rod ends 19.00; auto radiators, unsweated 18.50-19.00; cocks and faucets 19.50-20.00; brass pipe 19.50-20.00.

Lead: Heavy 11.50; battery plate 6.25-6.50; linotype and stereotype 13.50-14.00; electrotype 12.00-12.50; mixed babbitt 12.00-12.50

Magnesium: Clippings 18.50-13.50; clean castings 17.50-18.50; iron castings, not over 10% removable Fe, 15.50-16.50.

Monel: Clippings 28.00; old sheet 26.00; turnings 21.00; rods 28.00.

Nickel: Sheets and clips 57.00; rolled anodes 57.00; turnings 40.00; rod ends 57.00.

Tin: No. 1 pewter 50.00-55.00; block tin pipe 70.00-75.00; No. 1 babbitt 45.00.

Zinc: Old zinc, 5.50; new die cast scrap, 4.75-5.00; old die cast scrap, 3.25-3.50.

REFINERS' BUYING PRICES

(Cents per pound, carlots, delivered refinery)

Aluminum: 1100 clippings 20.00-21.00; 3003 clippings 20.00-21.00; 6151 clippings 20.00-21.00; 5052 clippings 20.00-21.00; 2014 clippings 19.00-20.00; 2017 clippings 19.00-20.00; 2024 clippings 19.00-20.00; mixed clippings 18.00-19.25; old sheet 17.50-18.50; old cast 17.50-18.50; clean old cable (free of steel) 19.00-20.00; borings and turnings 17.50-18.50.

Beryllium Copper: Heavy scrap, 0.020-in. and heavier, not less than 1.5% Be, 45.0; light scrap 40.0.

Copper, Brass: No. 1 copper 33.50; No. 2 copper 32.0; light copper 30.50; refinery brass (60% copper) per dry copper content 28.0.

INGOTMAKERS' BUYING PRICES

(Cents per pound, carlots, delivered)

Copper, Brass: No. 1 copper 30.50-31.00; No. 2 copper 29.00-29.50; light copper 27.50-28.00; No. 1 composition borings 25.50-26.25; No. 1 composition solids 26.0-26.50; heavy yellow brass solids 20.50-21.50; yellow brass turnings 20.0; radiators 21.0-21.50.

PLATING MATERIALS

(F.o.b. shipping point, freight allowed on quantities)

ANODES

Cadmium: Special or patented shapes $1.70 per lb.

Copper: Flat-rolled 48.42, oval 47.92, 5000-10,000 lb; electrodeposited 42.78, cast 45.04, 2000-5000 lb lots.

Nickel: Depolarized, less than 100 lb $1.015; 100-499 lb 99.5; 500-4999 lb 95.5; 5000-29,999 lb 93.5; 30,000 lb 91.5. Carbonized, deduct 3 cents a lb. All prices eastern delivery effective Jan. 1, 1955.

Tin: Bar or slab, less than 200 lb $1.085; 200-499 lb $1.07; 500-999 lb $1.065; 1000 lb or more $1.05.

Zinc: Bar 20.00, bar or flat top 19.00 ton lots.

CHEMICALS

Cadmium Oxide: $2.15 per lb, in 100 lb drums.

Chromic Acid: Less than 10,000 lb 28.50; over 10,000 lb 27.50.

Copper Cyanide: 100 lb 71.80; 200 lb 71.05; 300 lb 70.30; 400-900 lb 70.05; 1000 lb and over 68.05, effective Feb. 11, 1955.

Copper Sulphate: Crystal, 100 lb 20.5; 200 lb 17.5; 300 lb 16.5; 400 lb 16.0; 500-1900 14.5; 2000 to 10,000 lb 14.25; 10,000 and up 14.15. Powder, add .5 to above prices. Effective Jan. 31, 1955.

Nickel Chloride: 100 lb 46.5; 200 lb 44.5; 300 lb 42.5; 400-4900 lb 41.5; 5000-9900 lb 39.50; 10,000 lb and over 38.5. All prices eastern delivery effective Jan. 1, 1955.

Nickel Sulphate: 100 lb 38.25; 200 lb 36.25; 300 lb 35.25; 400-4900 lb 33.25; 5000-35,900 lb 31.25; 36,000 lb 30.25. All prices eastern delivery effective Jan. 1, 1955.

Silver Cyanide: Cents per ounce, 16 oz 80.625; 100 oz 78.50; 25,000 oz and over 77.325.

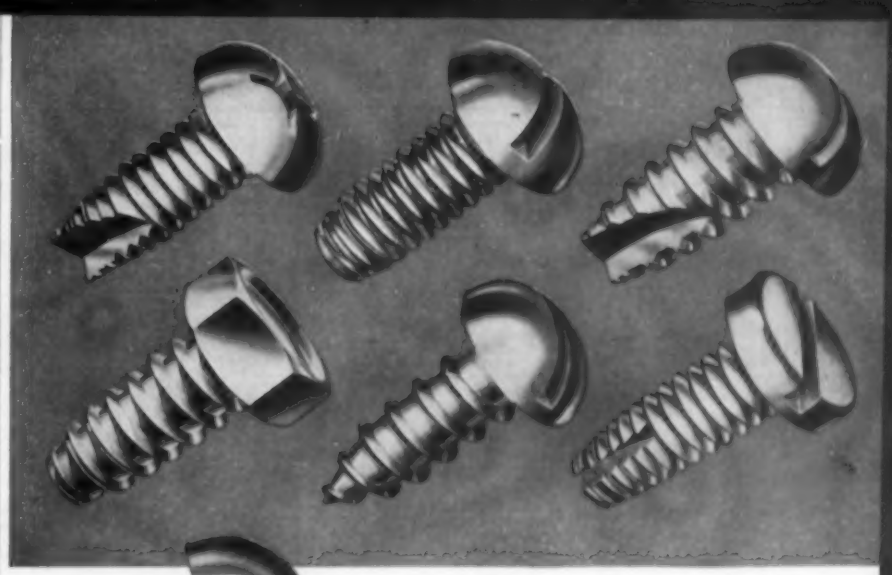
Sodium Cyanide: Egg, under 1000 lb 19.80; 1000-19,900 lb 18.80; 20,000 lb and over 17.60; granular, add 1-cent premium to above.

Sodium Stannate: Less than 100 lb 60.6; 100-600 lb 55.4; 700-1900 lb 53.0, 2000-9900 lb 51.2; 10,000 lb or more 50.1.

Stannous Chloride (Anhydrous): Less than 50 lb $1.551; 50 lb $1.211, 100-300 lb $1.081, 400-900 lb $1.037; 1000-1900 lb $1.013; 2000-4900 lb 97.6; 5000-19,900 lb 91.5, 20,000 lb and over 85.4.

Stannous Sulphate: Less than 5 lb $1.252; 50 lb 95.2; 100-1900 lb 93.2; 2000 lb and over 91.2.

Zinc Cyanide: Under 1000 lb 54.30; 1000 lb and over 52.30.



You Get Economical, Quick, Secure Fastening with Townsend Tapping Screws

You enjoy the economy of quality when you use Townsend tapping screws. They are made to provide an easy method of securely fastening metal, plastics, wood, asbestos and compositions with efficiency.

The use of Townsend thread forming screws eliminates costly tapping operations as the precision-rolled thread forms a mating thread when the screw is driven into the material. They are widely used in sheet metal, castings, and a variety of non-metallic materials. They may be removed and replaced without impairment of their holding power.

Townsend thread cutting screws have an off-center slot which presents a true, sharp, thread-cutting face which acts as a tap when the screw is driven into an untapped hole. By cutting their own threads, these screws fit tightly and resist loosening from vibration. There is no chance of size discrepancy between screw and tapped hole.

Townsend tapping screws are available in the types shown here in a variety of head styles with slotted or Phillips recessed and hex heads. They are but one group of the Townsend family of 10,000 types of standard and special fasteners and small parts used by all industry to improve assembly and speed production.

As representatives of "The Fastening Authority" Townsend engineers can draw upon 138 years of accumulated experience in wire drawing and cold forming to help solve your fastening problems. You can depend upon Townsend to give you excellent service in any quantity. For additional information on the economy of using Townsend tapping screws, send the coupon below or write.

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Sales Offices in Principal Cities

Cherry Rivet Division • Santa Ana, California

In Canada: *Parmenter & Bullock Manufacturing Company, Ltd., Gananoque, Ontario*

TOWNSEND COMPANY
Sales Department
New Brighton, Pa.

Please send to me without obligation Tapping Screw Bulletin TL-88.

Name _____ Title _____

Company _____

Street _____

City _____ Zone _____ State _____

Steel Prices

Mill prices as reported to STEEL, cents per pound except as otherwise noted. Changes shown in italics. Code numbers following mill points indicate producing company; Key on page 121. Key to footnotes, page 123.

SEMIFINISHED

INGOTS, Carbon, Forging (NT)

Munhall,Pa. U5 .....$61.50

INGOTS, Alloy (NT)

Detroit R7 .....$65.00
Houston S5 .....70.00
Midland,Pa. C18 .....65.00
Munhall,Pa. U5 .....65.00

BILLETS, BLOOMS & SLABS Carbon, Rerolling (NT)

Aliquippa,Pa. J5 ....$64.00
Bessemer,Pa. U5 .....64.00
Bridgeport,Conn. N19 ..69.00
Buffalo R2 .....64.00
Clairton,Pa. U5 .....64.00
Ensley,Ala. T2 .....64.00
Fairfield,Ala. T2 .....64.00
Fontana,Calif. K1 ....72.00
Gary,Ind. U5 .....64.00
Johnstown,Pa. B2 .....64.00
Lackawanna,N.Y. B2..64.00
Munhall,Pa. U5 .....64.00
Pittsburgh J5 .....64.00
So.Chicago,Ill. R2, U5..64.00
So.Duquesne,Pa. U5 ...64.00
Youngstown R2 .....64.00

Carbon, Forging (NT)

Aliquippa,Pa. J5 ....$78.00
Bessemer,Pa. U5 .....78.00
Bridgeport,Conn. N19 ..83.00
Buffalo R2 .....78.00
Canton,O. R2 .....80.00
Clairton,Pa. U5 .....78.00
Conshohocken,Pa. A3 ..83.00
Ensley,Ala. T2 .....78.00
Fairfield,Ala. T2 .....78.00
Fontana,Calif. K1 ....86.00
Gary,Ind. U5 .....78.00
Geneva,Utah C11 .....78.00
Houston S5 .....83.00
Johnstown,Pa. B2 .....78.00
Lackawanna,N.Y. B2..78.00
LosAngeles B3 .....87.50
Midland,Pa. C18 .....78.00
Munhall,Pa. U5 .....78.00
Pittsburgh J5 .....78.00
Seattle B3 .....91.50
So.Chicago R2,U5,W14..78.00
So.Duquesne,Pa. U5 ...78.00
So.SanFrancisco B3 ...87.50

Alloy, Forging (NT)

Bethlehem,Pa. B2 ....$86.00
Buffalo R3 .....86.00
Canton,O. R2, T7 ....86.00
Conshohocken,Pa. A3 ..93.00
Detroit R7 .....86.00
Fontana,Calif. K1 ....106.00
Gary,Ind. U5 .....86.00
Houston S5 .....91.00
Ind.Harbor,Ind. Y1 ....86.00
Johnstown,Pa. B2 .....86.00
Lackawanna,N.Y. B2..86.00
LosAngeles B3 .....106.00
Massillon,O. R2 .....86.00
Midland,Pa. C18 .....86.00
Munhall,Pa. U5 .....86.00
So.Chicago, R2,U5,W14..86.00
So.Duquesne,Pa. U5 ...86.00
Struthers,O. Y1 .....86.00
Warren,O. C17 .....86.00

ROUNDS, SEAMLESS TUBE (NT)

Buffalo R2 .....$96.50
Canton,O. R2 .....96.50
Cleveland R2 .....96.50
Gary,Ind. U5 .....96.50
So.Chicago R2, W14 ...96.50
So.Duquesne,Pa. U5 ...96.50

SKELP

Aliquippa,Pa. J5 .....4.00
Fontana,Calif. K1 ....4.775
Munhall,Pa. U5 .....3.90
SparrowsPoint,Md. B2..3.90
Warren,O. R2 .....3.90
Youngstown R2, U5 ....3.90

WIRE RODS

AlabamaCity,Ala. R2 ..4.675
Aliquippa,Pa. J5 .....4.675
Alton,Ill. L1 .....4.85
Buffalo B11, W12 ....4.675
Cleveland A7 .....4.675
Donora,Pa. A7 .....4.675
Fairfield,Ala. T2 .....4.675
Fontana,Calif. K1 ....5.475
Houston S5 .....4.925
IndianaHarbor,Ind. Y1 ..4.675
Johnstown,Pa. B2 .....4.675
Joliet,Ill. A7 .....4.675
KansasCity,Mo. S5 .....4.925
Kokomo,Ind. C16 .....4.775
LosAngeles B3 .....5.475
Minnequa,Colo. C10 ..4.925
Monessen,Pa. P7 .....4.675
No.Tonawanda,N.Y.B11 4.675
Pittsburg,Calif. C11 ...5.325
Portsmouth P12 .....4.675
Roebling,N.J. R5 .....4.775
So.Chicago,Ill. R2 ....4.675
SparrowsPoint,Md. B2..4.775
Sterling,Ill.(1) N15 ....4.675
Sterling,Ill. N15 .....4.775
Struthers,O. Y1 .....4.675
Torrance,Calif. C11 ....5.475
Worcester,Mass. A7 ..4.975

STRUCTURALS

Carbon Steel Stand. Shapes

Ala.City,Ala. R2 .....4.25
Aliquippa,Pa. J5 .....4.25
Bessemer,Ala. T2 .....4.25
Bethlehem,Pa. B2 .....4.30
Birmingham C15 .....4.25
Clairton,Pa. U5 .....4.25
Fairfield,Ala. T2 .....4.25
Fontana,Calif. K1 ....4.90
Gary,Ind. U5 .....4.25
Geneva,Utah C11 .....4.25
Houston S5 .....4.30
Ind.Harbor,Ind. I-2 ....4.25
Johnstown,Pa. B2 .....4.30
KansasCity,Mo. S5 ....4.30
Lackawanna,N.Y. B2 ...4.30
LosAngeles B3 .....4.95
Minnequa,Colo. C10 ....4.70
Munhall,Pa. U5 .....4.25
Niles,Calif. P1 .....4.90
Phoenixville,Pa. P4 ....3.95
Portland,Oreg. O4 .....5.00
Seattle B3 .....5.00
So.Chicago U5, W14 ....4.25
So.SanFrancisco B3 ....4.90
Torrance,Calif. C11 ....4.95
Weirton,W.Va. W6 ....4.25

Wide Flange

Bethlehem,Pa. B2 .....4.30
Clairton,Pa. U5 .....4.25
Fontana,Calif. K1 .....5.25
Lackawanna,N.Y. B2 ...4.30
Munhall,Pa. U5 .....4.25
Phoenixville,Pa. P4 ....4.30
So.Chicago,Ill. U5 .....4.25

Alloy Stand. Shapes

Clairton,Pa. U5 .....5.20
Fontana,Calif. K1 .....6.60
Gary,Ind. U5 .....5.20
Houston S5 .....5.25
Munhall,Pa. U5 .....5.20
So.Chicago,Ill. U5 .....5.20

H.S., L.A. Stand. Shapes

Aliquippa,Pa. J5 .....6.40
Bessemer,Ala. T2 .....6.40
Bethlehem,Pa. B2 .....6.45
Clairton,Pa. U5 .....6.40
Fairfield,Ala. T2 .....6.40
Fontana,Calif. K1 .....7.05
Gary,Ind. U5 .....6.40
Geneva,Utah C11 .....6.40
Houston S5 .....6.45
Ind.Harbor,Ind. I-2, Y1.6.40
Johnstown,Pa. B2 .....6.45
KansasCity,Mo. S5 ....6.45
Lackawanna,N.Y. B2 ...6.45
LosAngeles B3 .....7.10
Munhall,Pa. U5 .....6.40
Seattle B3 .....7.15
So.Chicago,Ill. U5, W14..6.40
So.SanFrancisco B3 ....7.05
Struthers,O. Y1 .....6.40

H.S., L.A. Wide Flange

Bethlehem,Pa. B2 .....6.45
Lackawanna,N.Y. B2 ...6.45
Munhall,Pa. U5 .....6.40
So.Chicago,Ill. U5 ....6.40

PILING

BEARING PILES

Munhall,Pa. U5 .....4.25
So.Chicago,Ill. U5 .....4.25

STEEL SHEET PILING

Ind.Harbor,Ind. I-2 ...5.075
Lackawanna,N.Y. B2 ..5.075
Munhall,Pa. U5 .....5.075
So.Chicago,Ill. U5 ....5.075

PLATES

PLATES, Carbon Steel

Ala.City,Ala. R2 .....4.225
Aliquippa,Pa. J5 .....4.225
Ashland,Ky.(15) A10 ..4.225
Bessemer,Ala. T2 .....4.225
Bridgeport,Conn. N19 ..4.475
Buffalo R2 .....4.225
Clairton,Pa. U5 .....4.225
Claymont,Del. C22 ....4.225
Cleveland J5, R2 .....4.225
Coatesville,Pa. L7 ....4.225
Conshohocken,Pa. A3 ..4.225
Ecorse,Mich. G5 .....4.325
Fairfield,Ala. T2 .....4.225
Fontana,Calif.(30) K1..4.875
Gary,Ind. U5 .....4.225
Geneva,Utah C11 .....4.225
GraniteCity,Ill. G4 ....4.425
Harrisburg,Pa. C5 ....3.975
Houston S5 .....4.275
Ind.Harbor,Ind. I-2, Y1.4.225
Johnstown,Pa. B2 .....4.225
Lackawanna,N.Y. B2 ..4.225
LoneStar,Tex. L6 .....4.55
Mansfield,O. E6 .....4.225
Minnequa,Colo. C10 ....5.075
Munhall,Pa. U5 .....4.225
Newport,Ky. N9 .....4.225
Pittsburgh J5 .....4.225
Riverdale,Ill. A1 .....4.225
Seattle B3 .....5.125
Sharon,Pa. S3 .....4.225
So.Chicago,Ill. R2 .....4.225
So.Chicago,Ill. U5,W14..4.225
SparrowsPoint,Md. B2..4.225
Steubenville,O. W10 ...4.225
Warren,O. R2 .....4.225
Weirton,W.Va. W6 .....4.225
Youngstown R2,U5,Y1..4.225

PLATES, Carbon Abras. Resist.

Fontana,Calif. K1 ....6.925
Geneva,Utah C11 .....5.375

PLATES, Wrought Iron

Economy,Pa. B14 .....9.80

PLATES, High-Strength Low-Alloy

Aliquippa,Pa. J5 .....6.45
Bessemer,Ala. T2 .....6.45
Clairton,Pa. U5 .....6.45
Cleveland J5, R2 .....6.46
Coatesville,Pa. L7 .....6.45
Conshohocken,Pa. A3 ..6.45
Ecorse,Mich. G5 .....6.56
Fairfield,Ala. T2 .....6.45
Fontana,Calif.(30) K1 ..7.15
Gary,Ind. U5 .....6.45
Geneva,Utah C11 .....6.45
Houston S5 .....6.50
Ind.Harbor,Ind. I-2, Y1.6.45
Johnstown,Pa. B2 .....6.45
Lackawanna,N.Y. B2 ...6.45
LosAngeles B3 .....7.35
Munhall,Pa. U5 .....6.45
Pittsburgh J5 .....6.45
Seattle B3 .....7.35
Sharon,Pa. S3 .....6.45
So.Chicago,Ill. U5, W14.6.45
SparrowsPoint,Md. B2..6.45
Youngstown U5, Y1 ....6.45

PLATES, Alloy

Claymont,Del. C22 ....5.80
Coatesville,Pa. L7 .....5.80
Fontana,Calif. K1 .....6.65
Gary,Ind. U5 .....5.80
Houston S5 .....5.85
Ind.Harbor,Ind. Y1 .....5.80
Johnstown,Pa. B2 .....5.80
Munhall,Pa. U5 .....5.80
Newport,Ky. N9 .....5.80
Seattle B3 .....6.70
Sharon,Pa. S3 .....5.80
So.Chicago,Ill. U5, W14.5.80
SparrowsPoint,Md. B2..5.80
Youngstown Y1 .....5.80

FLOOR PLATES

Cleveland J5 .....5.275
Conshohocken,Pa. A3 ..5.275
Harrisburg,Pa. C5 ....5.15
Ind.Harbor,Ind. I-2 ....5.275
Munhall,Pa. U5 .....5.275
So.Chicago,Ill. U5 ....5.275

PLATES, Ingot Iron

Ashland c.l. (15) A10..6.475
Ashland l.c.l. (15) A10.6.975
Cleveland c.l. R2 .....6.825
Warren,O. c.l. R2 .....6.825

BARS

BARS, Hot-Rolled Carbon

Ala.City,Ala. R2 .....4.30
Aliquippa,Pa. J5 .....4.30
Alton,Ill. L1 .....4.50
Atlanta,Ga. A11 .....4.50
Bessemer,Ala. T2 .....4.30
Birmingham C15 .....4.30
Bridgeport,Conn. N19 ..4.55
Buffalo R2 .....4.30
Canton,O. R2 .....4.40
Clairton,Pa. U5 .....4.30
Cleveland R2 .....4.30
Ecorse,Mich. G5 .....4.40
Emeryville,Calif. J7 ....5.05
Fairfield,Ala. T2 .....4.30
FairlessHills,Pa. U5 ....4.45
Fontana,Calif. K1 .....5.00
Gary,Ind. U5 .....4.30
Houston S5 .....4.55
Ind.Harbor,Ind. I-2, Y1.4.30
Johnstown,Pa. B2 .....4.30
KansasCity,Mo. S5 .....4.56
Lackawanna,N.Y. B2 ...4.30
LosAngeles B3 .....5.00
Massillon,O. R2 .....4.40
Midland,Pa. C18 .....4.30
Milton,Pa. M18 .....4.30
Minnequa,Colo. C10 ....4.75
Niles,Calif. P1 .....5.00
N.Tonawanda,N.Y. B11..4.30
Pittsburg,Calif. C11 ....5.00
Pittsburgh J5 .....4.30
Portland,Oreg. O4 .....5.05
Seattle B3, N14, P23 ..5.05
So.Chicago, R2,U5,W14..4.30
So.Duquesne,Pa. U5 ....4.30
So.SanFran.,Calif. B3 ..5.05
Sterling,Ill.(1) N15 ....4.30
Sterling,Ill. N15 .....4.40
Struthers,O. Y1 .....4.30
Torrance,Calif. C11 ....5.00
Warren,O. R2 .....4.30
Weirton,W.Va. W6 .....4.30
Youngstown R2, U5 ....4.30

BARS, Hot-Rolled Alloy

Bethlehem,Pa. B2 ....5.075
Bridgeport,Conn. N19 ..5.225
Buffalo R2 .....5.075
Canton,O. R2, T7 ....5.075
Clairton,Pa. U5 .....5.075
Detroit R7 .....5.075
Ecorse,Mich. G5 .....5.175
Fontana,Calif. K1 ....6.125
FairlessHills,Pa. U5 ..5.225
Gary,Ind. U5 .....5.075
Houston S5 .....5.325
Ind.Harbor,Ind. I-2, Y1.5.075
Johnstown,Pa. B2 ....5.075
KansasCity,Mo. S5 ....5.325
Lackawanna,N.Y. B2 ..5.075
LosAngeles B3 .....6.125
Massillon,O. R2 .....5.075
Midland,Pa. C18 .....5.075
So.Chicago R2, U5,W14 5.075
So.Duquesne,Pa. U5 ..5.075
Struthers,O. Y1 .....5.075
Warren,O. C17 .....5.075
Youngstown U5 .....5.075

BARS, H.R. Loaded Alloy

Warren,O. C17 .....5.825

BARS & SMALL SHAPES, H.R. High-Strength Low-Alloy

Aliquippa,Pa. J5 .....6.45
Bessemer,Ala. T2 .....6.45
Bethlehem,Pa. B2 .....6.45
Clairton,Pa. U5 .....6.45
Cleveland R2 .....6.45
Ecorse,Mich. G5 .....6.55
Fairfield,Ala. T2 .....6.45
Fontana,Calif. K1 .....7.70
Gary,Ind. U5 .....6.45
Houston S5 .....6.70
Ind.Harb.,Ind. I-2, Y1..6.45
Johnstown,Pa. B2 .....6.45
KansasCity,Mo. S5 ....6.70
Lackawanna,N.Y. B2 ...6.45
LosAngeles B3 .....7.15
Pittsburgh J5 .....6.45
Seattle B3 .....7.20
So.Chicago W14 .....6.45
So.Duquesne,Pa. U5 ....6.45
So.SanFrancisco B3 ....7.20
Struthers,O. Y1 .....6.45
Warren,O. R2 .....6.45
Youngstown U5 .....6.40

BAR SIZE ANGLES; H.R. Carbon

Bethlehem,Pa. B2 .....4.45

BAR SIZE ANGLES; S. Shapes

Aliquippa,Pa. J5 .....4.30
Atlanta A11 .....4.50
Fontana,Calif. K1 .....5.00
Niles,Calif. P1 .....5.00
Pittsburgh J5 .....4.30
Portland,Oreg. O4 .....5.05
SanFrancisco B7 .....4.70

BAR SHAPES, Hot-Rolled Alloy

Clairton,Pa. U5 .....5.20
Gary,Ind. U5 .....5.20
Houston S5 .....5.45
KansasCity S5 .....5.45
Youngstown U5 .....5.20

BARS, Cold-Finished Carbon

Ambridge,Pa. W18 ....5.40
BeaverFalls,Pa. M12, R2 5.40
Buffalo S5 .....5.45
Camden,N.J. P13 .....5.55
Carnegie,Pa. C12 .....5.40
Chicago W18 .....5.40
Cleveland A7, C20 .....5.40
Detroit R7 .....5.40
Detroit B5, P17 .....5.80
Donora,Pa. A7 .....5.40
Elyria,O. W8 .....5.40
FranklinPark,Ill. N5 ....5.40
Gary,Ind. R2 .....5.40
GreenBay,Wis. F4 .....5.40
Hammond,Ind. L2, M13..5.40
Hartford,Conn. R2 .....5.90
Harvey,Ill. B5 .....5.40
LosAngeles R2, S30 ....6.85
Mansfield,Mass. B5 ....5.95
Massillon,O. R2, R8 ....5.40
Midland,Pa. C18 .....5.40
Monaca,Pa. S17 .....5.40
Newark,N.J. W18 .....5.85
NewCastle,Pa.(17) B4 ..5.40
Pittsburgh J5 .....5.40
Plymouth,Mich. P6 ....5.85
Putnam,Conn. W18 ....5.95
Readville,Mass. C14 ....5.95
So.Chicago,Ill. W14 ....5.40
SpringCity,Pa. K3 .....5.85
Struthers,O. Y1 .....5.40
Waukegan,Ill. A7 .....5.40
Worcester,Mass. W19 ....5.85
Youngstown F3, Y1 ....5.40

BARS, Cold-Finished Carbon (Turned and Ground)

Cumberland,Md.(5) C19.4.65

BARS, Cold-Finished Alloy

Ambridge,Pa. W18 ....6.625
BeaverFalls,Pa. M12,R2 6.625
Bethlehem,Pa. B2 .....6.625
Buffalo B5 .....6.625
Camden,N.J. P13 .....6.80
Canton,O. T7 .....6.625
Carnegie,Pa. C12 .....6.625
Chicago W18 .....6.625
Cleveland A7, C20 .....6.625
Detroit R7 .....6.625
Detroit B5, P17 .....6.825
Donora,Pa. A7 .....6.625
Elyria,O. W8 .....6.625
Gary,Ind. R2 .....6.625
GreenBay,Wis. F7 .....6.625
Hammond,Ind. L2, M13 6.625
Hartford,Conn. R2 .....6.925
Harvey,Ill. B5 .....6.625
Lackawanna,N.Y. B2 ..6.625
LosAngeles S30 .....8.30
Mansfield,Mass. B5 ...6.925
Massillon,O. R2, R8 ...6.625
Midland,Pa. C18 .....6.625
Monaca,Pa. S17 .....6.625
Newark,N.J. W18 .....6.80
Plymouth,Mich. P5 ....6.825
So.Chicago W14 .....6.625
SpringCity,Pa. K3 .....6.80
Struthers,O. Y1 .....6.625
Warren,O. C17 .....6.625
Waukegan,Ill. A7 .....6.625
Worcester,Mass. A7 ..6.925
Youngstown F3, Y1 ....6.625

BARS, C.F. Loaded Alloy

Ambridge,Pa. W18 ....7.525
Camden,N.J. P13 .....7.70
Carnegie,Pa. C12 .....7.525
Chicago W18 .....7.525
Cleveland C20 .....7.525
Monaca,Pa. S17 .....7.525
Newark,N.J. W18 .....7.70
SpringCity,Pa. K3 .....7.70
Warren,O. C17 .....7.525

BARS, Reinforcing (To fabricators)

Ala.City,Ala. R2 .....4.30
Atlanta A11 .....4.80
Birmingham C15 .....4.30
Buffalo R2 .....4.30
Cleveland R2 .....4.30
Emeryville,Calif. J7 ....5.05
Fairfield,Ala. T2 .....4.30
FairlessHills,Pa. U5 ....4.45
Fontana,Calif. K1 .....5.00
Ft.Worth,Tex.(42) T4 ..4.90
Gary,Ind. U5 .....4.30
Houston S5 .....4.55

Ind.Harbor,Ind. I-2, Y1..4.30
Johnstown,Pa. B2 .....4.30
KansasCity,Mo. S5 .....4.35
Lackawanna,N.Y. B2 ...4.30
LosAngeles B3 .....5.00
Milton,Pa. M18 .....4.30
Minnequa,Colo. C10 ....4.75
Niles,Calif. P1 .....5.00
Pittsburg,Calif. C11 ....5.00
Pittsburgh J5 .....4.30
Portland,Oreg. O4 .....5.05
SandSprings,Okla. S5 ..4.80
Seattle B3, N14, P23 ...5.05
So.Chicago R2 .....4.30
So.Duquesne,Pa. U5 ....4.30
So.SanFrancisco B3 ....5.05
SparrowsPoint,Md. B2..4.30
Sterling,Ill.(1) N15 ....4.30
Sterling,Ill. N15 .....4.40
Struthers,O. Y1 .....4.30
Torrance,Calif. C11 ....5.00
Youngstown R2, U5 ....4.30

BARS, Reinforcing
(Fabricated; to Consumers)

Johnstown,Pa. ¼-1" B2 5.70
KansasCity S5 .....6.50
LosAngeles B3 .....5.95
Marion,O. P11 .....5.55
Pittsburgh J5, U8 .....5.72
Seattle B3, N14, P23 ...6.15
So.SanFrancisco B3 ....6.00
SparrowsPt. ½-1" B2..5.70
Williamsport,Pa. S19 ...5.60

RAIL STEEL BARS

Avis,Pa.(3) J8 .....4.25
ChicagoHts.(3) C2, I-2..4.20
ChicagoHts.(4) C2, I-2..4.30
Ft.Worth,Tex.(26) T4 ..4.75
Franklin,Pa.(3) F5 ....4.20
Franklin,Pa.(4) F5 ....4.30
Marion,O.(3) P11 .....4.15
Moline,Ill.(3) R2 .....4.30
Tonawanda(3) B12 ....4.15
Tonawanda(4) B12 .....4.30
Williamsport,Pa.(3) S19.4.30

BARS, Wrought Iron

Economy,Pa.(S.R.) B14 10.85
Economy,Pa.(D.R.) B14 13.50
Economy(Staybolt) B14 13.80
McK.Rks.(S.R.) L5 ....10.85
McK.Rks.(D.R.) L5 ..14.75
McK.Rks.(Staybolt) L5 16.25

SHEETS

SHEETS, Hot-Rolled Steel
(18 Gage and Heavier)

Ala.City,Ala. R2 .....4.05
Allenport,Pa. P7 .....4.05
Ashland,Ky.(8) A10 ....4.05
Cleveland J5, R2 .....4.05
Conshohocken,Pa. A3 ..4.10
Detroit(8) M1 .....4.15
Ecorse,Mich. G5 .....4.15
Fairfield,Ala. T2 .....4.05
FairlessHills,Pa. U5 ....4.10
Fontana,Calif. K1 ....4.825
Gary,Ind. U5 .....4.05
Geneva,Utah C11 .....4.15
GraniteCity,Ill. G4 .....4.25
Ind.Harbor,Ind. I-2, Y1.4.05
Irvin,Pa. U5 .....4.05
Kokomo,Ind. C16 .....4.15
Lackawanna,N.Y. B2 ....4.05
Mansfield,O. E6 (37) 4.05
Mansfield,O. E6(38) 4.80
Munhall,Pa. U5 .....4.05
Newport,Ky. N9 .....4.05
Niles,O. N12 .....4.05
Pittsburg,Calif. C11 ....4.75
Pittsburgh J5 .....4.05
Portsmouth,O. P12 .....4.05
Riverdale,Ill. A1 .....4.05
Sharon,Pa. S3 .....4.05
So.Chicago,Ill. W14 .....4.05
SparrowsPoint,Md. B2 ..4.05
Steubenville,O. W10 ....4.05
Warren,O. R2 .....4.05
Weirton,W.Va. W6 ....4.05
Youngstown U5, Y1 ....4.05

SHEETS, H.R. (19 ga. lighter)

Ala.City,Ala. R2 .....5.35
Kokomo,Ind. C16 .....5.20
Niles,O. N12 .....4.95

SHEETS, H.R. Alloy

Ind.Harbor,Ind. Y1 .....5.80
Youngstown Y1 .....5.80

SHEETS, H.R. (14 ga. heavier)
High-Strength Low-Alloy

Cleveland J5, R2 .....6.10
Conshohocken,Pa. A3 ...6.15
Ecorse,Mich. G5 .....6.20
Fairfield,Ala. T2 .....6.10
FairlessHills,Pa. U5 ....6.15
Fontana,Calif. K1 .....6.875
Gary,Ind. U5 .....6.10
Ind.Harbor,Ind. I-2, Y1.6.10
Irvin,Pa. U5 .....6.10
Lackawanna(35) B2 ....6.10
Munhall,Pa. U5 .....6.10
Pittsburgh J5 .....6.10
Sharon,Pa. S3 .....6.10
So.Chicago,Ill. U5 ....6.10
SparrowsPoint(36) B2...6.10
Warren,O. R2 .....6.10
Weirton,W.Va. W6 ....6.10
Youngstown U5, Y1 ....6.10

SHEETS, Hot-Rolled Ingot Iron
(18 Gage and Heavier)

Ashland,Ky.(8) A10 ....4.30
Cleveland R2 .....4.65
Ind.Harbor,Ind. I-2 ....4.30
Warren,O. R2 .....4.65

SHEETS, Cold-Rolled Steel
(Commercial Quality)

Allenport,Pa. P7 .....4.95
Cleveland J5, R2 .....4.95
Conshohocken,Pa. A3 ...5.00
Ecorse,Mich. G5 .....5.05
Fairfield,Ala. T2 .....4.95
FairlessHills,Pa. U5 ....5.00
Follansbee,W.Va. F4 ...4.95
Fontana,Calif. K1 .....6.05
Gary,Ind. U5 .....4.95
GraniteCity,Ill. G4 .....5.15
Ind.Harbor,Ind. I-2, Y1.4.95
Irvin,Pa. U5 .....4.95
Lackawanna,N.Y. B2 ..4.95
Middletown,O. A10 .....4.95
Newport,Ky. N9 .....4.95
Pittsburg,Calif. C11 ....5.90
Pittsburgh J5 .....4.95
Portsmouth,O. P12 .....4.95
SparrowsPoint,Md. B2..4.95
Warren,O. R2 .....4.95
Weirton,W.Va. W6 ....4.95
Youngstown Y1 .....4.95

SHEETS, Cold-Rolled
High-Strength Low-Alloy

Cleveland J5, R2 .....7.50
Ecorse,Mich. G5 .....7.60
FairlessHills,Pa. U5 ....7.55
Fontana,Calif. K1 .....8.55
Gary,Ind. U5 .....7.50
IndianaHarbor,Ind. Y1..7.50
Irvin,Pa. U5 .....7.50
Lackawanna(37) B2 ....7.50
Pittsburgh J5 .....7.50
SparrowsPoint(38) B2 ..7.50
Warren,O. R2 .....7.50
Weirton,W.Va. W6 ....7.50
Youngstown Y1 .....7.50

SHEETS, Cold-Rolled Ingot Iron

Cleveland R2 .....5.55
Middletown,O. A10 .....5.45
Warren,O. R2 .....5.55

SHEETS, Culvert (16 Ga.)	Cu Alloy	Cu Fe
Ashland,Ky. A10	6.30	....
Canton,O. R2	6.50	7.10
Fairfield T2	5.70	....
Gary,Ind. U5	5.70	5.95
Ind.Harbor I-2	5.70	5.95
Irvin,Pa. U5	5.70	....
Kokomo,Ind. C16	5.80	....
MartinsFry.,O. W10	5.70	....
Newport,Ky. N9	5.70	5.95
Pitts.,Calif. C11	6.45	....
SparrowsPt. B2	5.70	....

SHEETS, Culvert—Pure Iron

Ashland,Ky. A10 .....6.75
Gary,Ind. U5 .....5.95
MartinsFerry,O. W10 ..5.95

SHEETS, Galvanized Steel
Hot-Dipped

Ala.City,Ala. R2 .....5.45‡
Ashland,Ky. A10 .....5.45*
Butler,Pa. A10 .....5.45†
Canton,O. R2 .....5.45‡
Delphos,O. N16 .....6.10‡
Dover,O. R1 .....5.45‡
Fairfield,Ala. T2 .....5.45‡
Gary,Ind. U5 .....5.45*
GraniteCity,Ill. G4 ....5.65‡
Ind.Harbor,Ind. I-2 ...5.45‡
Irvin,Pa. U5 .....5.45‡
Kokomo,Ind. C16 .....5.55‡
MartinsFerry,O. W10 ..5.45*
Middletown,O. A10 ....5.45‡
Newport,Ky. N9 .....5.45‡
Niles,O. N12 .....5.45‡
Pittsburg,Calif. C11 ...6.20*
SparrowsPt.,Md. B2 ..5.45‡
Weirton,W.Va. W6 ....5.45*

*Continuous and noncontinuous. †Continuous. ‡Noncontinuous.

SHEETS, Wall Casing

Fontana,Calif. K1 ....6.325

SHEETS, Galvanized
High-Strength Low-Alloy

Irvin,Pa. U5 .....5.20
SparrowsPoint(39) B2 ..5.20

SHEETS, Galvannealed Steel

Canton,O. R2 .....5.85
Irvin,Pa. U5 .....5.85
Kokomo,Ind. C16 .....5.95
Newport,Ky. N9 .....5.85
Niles,O. N12 .....5.85

SHEETS, Galvanized Ingot Iron

Ashland,Ky.(8) A10 ...5.70
Canton,O. R2 .....6.20

SHEETS, Galvanized
Ingot Iron
(Hot-Dipped Continuous)

Ashland,Ky. A10 .....5.70
Butler,Pa. A10 .....5.70
Middletown,O. A10 ....5.70

SHEETS, Electrogalvanized

Cleveland(28) R2 .....6.30
Niles,O.(28) R2 .....6.30
Weirton,W.Va. W6 ....6.15

SHEETS, Aluminum Coated

Butler,Pa. A10 .....8.625

SHEETS, Enameling Iron

Ashland,Ky.(8) A10 ...5.375
Cleveland R2 .....5.375
Gary,Ind. U5 .....5.375
GraniteCity,Ill. G4 ....5.575
Ind.Harbor,Ind. I-2 ...5.375
Irvin,Pa. U5 .....5.375
Middletown,O. A10 ....5.375
Niles,O. N12 .....5.375
Youngstown Y1 .....5.375

BLUED STOCK, 29 ga.

Follansbee,W.Va. F4 ..7.375
Follansbee(23) F4 .....6.60
Yorkville,O. W10 .....7.375

SHEETS, Long Terne Steel
(Commercial Quality)

BeechBottom,W.Va. W10 5.85
Gary,Ind. U5 .....5.85
Mansfield,O. E6 .....5.85
Middletown,O. A10 ....5.85
Niles,O. N12 .....5.85
Weirton,W.Va. W6 ....5.85

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10 ....6.25

Key to Producers

A1 Acme Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A5 Alloy Metal Wire Co.
A6 American Shim Steel Co.
A7 American Steel & Wire
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.

B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B8 Braeburn Alloy Steel
B9 Brainard Steel Div., Sharon Steel Corp.
B10 E. & G. Brooke, Wickwire Spencer Steel Div., Colo. Fuel & Iron
B11 Buffalo Bolt Co., Div. Buffalo-Eclipse Corp.
B12 Buffalo Steel Corp.
B14 A. M. Byers Co.
B15 J. Bishop & Co.

C1 Calstrip Steel Corp.
C2 Calumet Steel Div., Borg-Warner Corp.
C4 Carpenter Steel Co.
C5 Central Iron & Steel Div. Barium Steel Corp.
C7 Cleve. Cold Rolling Mills
C8 Cold Metal Products Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft.
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft.
C15 Connors Steel Div. H. K. Porter Co. Inc.
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C23 Claymont Steel Products Dept. Wickwire Spencer Steel Division
C23 Charter Wire Inc.
C24 G. O. Carlson Inc.
C31 Chester Blast Furnace Inc.

D2 Detroit Steel Corp.
D3 Detroit Tube & Steel
D4 Disston & Sons, Henry
D6 Driver Harris Co.
D7 Dickson Weatherproof Nail Co.
D8 Damascus Tube Co.
D9 Wilbur B. Driver Co.

E1 Eastern Gas & Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E9 Empire Steel Corp.

F2 Firth Sterling Inc.
F3 Fitzsimons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div., Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
F8 Ft. Wayne Metals Inc.

G2 Globe Iron Co.
G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.

H1 Hanna Furnace Corp.
H7 Helical Tube Co.

I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.
I-6 Ivins, E., Steel Tube
I-7 Indiana Steel & Wire Co.

J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.

K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K7 Kenmore Metals Corp.

L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L5 Lockhart Iron & Steel
L6 Lone Star Steel Co.
L7 Lukens Steel Co.

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M6 Mercer Pipe Div., Sawhill Tubular Products
M8 Mid-States Steel & Wire
M12 Moltrup Steel Products
M13 Monarch Steel Div., Jones & Laughlin Steel Corp.
M14 McInnes Steel Co.
M16 Md. Fine & Special. Wire
M17 Metal Forming Corp.
M18 Milton Steel Prod. Div., Merritt-Chapman & Scott

N1 National-Standard Co.
N2 National Supply Co.
N3 National Tube Div.
N5 Nelsen Steel & Wire Co.
N6 NewEng.High Carb. Wire
N8 Newman-Crosby Steel
N9 Newport Steel Corp.
N12 Niles Rolling Mill Div.
N14 Nrthwst.Steel Roll. Mills
N15 Northwestern S.&W. Co.
N16 New Delphos Mfg. Co.
N19 Northeastern Steel Corp.

O3 Oliver Iron & Steel Corp.
O4 Oregon Steel Mills

P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke & Chem.
P7 Pittsburgh Steel Co.
P11 Pollak Steel Co.
P12 Portsmouth Division Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., Amer. Chain & Cable
P17 Plymouth Steel Co.
P19 Pitts. Rolling Mills
P20 Prod. Steel Strip Corp.
P23 Pacific Steel Rolling

R1 Reeves Steel & Mfg. Co.
R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R7 Rotary Electric Steel Co.
R8 RelianceDiv., Eaton Mfg.
R9 Rome Mfg. Co.
R10 Rodney Metals Inc.

S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S4 Sharon Tube Co.
S5 Sheffield Steel Div., Armco Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S12 Spencer Wire Corp.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S17 Superior Drawn Steel Co.
S18 Superior Steel Corp.
S19 Sweet's Steel Co.
S20 Southern States Steel
S23 Superior Tube Co.
S25 Stainless Welded Products
S26 Specialty Wire Co. Inc.
S30 Sierra Drawn Steel Corp.

T2 Tenn. Coal & Iron Div.
T3 Tenn. Prod. & Chem.
T4 Texas Steel Co.
T5 Thomas Strip Division, Pittsburgh Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div. Am. Rad. & Stan. San.
T13 Tube Methods Inc.

U4 Universal-Cyclops Steel
U5 United States Steel Corp.
U6 U. S. Pipe & Foundry
U7 Ulbrich Stainless Steels
U8 U. S. Steel Supply Div.

V2 Vanadium-Alloys Steel
V3 Vulcan Crucible Steel Co.

W1 Wallace Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W7 W.Va. Steel & Mfg. Co.
W8 West.Auto.Mach.Screw
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div., International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.
W19 Worcester Pressed Steel

Y1 Youngstown Sheet & Tube

STRIP

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2 ...4.05
Allenport,Pa. P7 ...4.05
Alton,Ill. L1 ...4.225
Ashland,Ky.(8) A10 ...4.05
Atlanta A11 ...4.25
Beaumont,Tex. T2 ...4.05
Birmingham C15 ...4.05
Bridgeport,Conn. N19 ...4.35
Buffalo(27) R2 ...4.05
Conshohocken,Pa. A3 ...4.10
Detroit M1 ...4.15
Ecorse,Mich. G5 ...4.15
Fairfield,Ala. T2 ...4.05
Fontana,Calif. K1 ...4.825
Gary,Ind. U5 ...4.05
Ind.Harbor,Ind. I-2, Y1 ...4.05
Johnstown,Pa.(25) B2 ...4.05
Lackaw'na,N.Y.(25) B2 ...4.05
LosAngeles(25) B3 ...4.80
Milton,Pa. M18 ...4.05
Minnequa,Colo. C10 ...5.15
N.Tonawanda,N.Y. B11 ...4.05
Pittsburg,Calif. C11 ...4.80
Portsmouth,O. P12 ...4.05
Riverdale,Ill. A1 ...4.05
SanFrancisco S7 ...5.00
Seattle(25) B3, P23 ...5.05
Seattle N14 ...5.05
Sharon,Pa. S3 ...4.05
So.Chicago,Ill. W14 ...4.05
So.SanFrancisco(25) B3 ...4.80
SparrowsPoint,Md. B2 ...4.05
Sterling(1) N15 ...4.05
Sterling,Ill. N15 ...4.15
Torrance,Calif. C11 ...4.80
Warren,O. R2 ...4.05
Weirton,W.Va. W6 ...4.05
Youngstown U5 ...4.05

STRIP, Hot-Rolled Alloy

Bridgeport,Conn. N19 ...7.00
Carnegie,Pa. S18 ...6.70
Fontana,Calif. K1 ...8.10
Gary,Ind. U5 ...6.70
Ind.Harbor,Ind. Y1 ...6.70
LosAngeles B3 ...7.90
Newport,Ky. N9 ...6.70
Seattle P23 ...7.80
Sharon,Pa. S3 ...6.70
So.Chicago W14 ...6.70
Youngstown U5, Y1 ...6.70

STRIP, Hot-Rolled High-Strength Low-Alloy

Beaumont,Tex. T2 ...6.15
Conshohocken,Pa. A3 ...6.15
Ecorse,Mich. G5 ...6.25
Fairfield,Ala. T2 ...6.15
Fontana,Calif. K1 ...7.25
Gary,Ind. U5 ...6.15
Houston S5 ...6.40
Ind.Harbor,Ind. I-2, Y1 6.15
KansasCity,Mo. S5 ...6.40
Lackawanna,N.Y. B2 ...6.15
LosAngeles(25) B3 ...6.90
Seattle(25) B3, P23 ...7.15
Sharon,Pa. S3 ...6.15
So.SanFrancisco(25) B3 6.90
SparrowsPoint,Md. B2 ...6.15
Warren,O. R2 ...6.15
Weirton,W.Va. W6 ...6.15
Youngstown U5, Y1 ...6.15

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10 ...4.30
Warren,O. R2 ...4.65

STRIP, Cold-Rolled Carbon

Anderson,Ind. G6 ...5.75
Baltimore T6 ...5.75
Beaton T6 ...6.30
Cleveland A7, J5 ...5.75
Conshohocken,Pa. A3 ...5.80
Dearborn,Mich. D3 ...5.85
Detroit P20 ...5.90
Detroit D2, M1 ...5.85
Dover,O. G6 ...5.75
Ecorse,Mich. G5 ...5.85
Fotlansbee,W.Va. F4 ...5.75
Fontana,Calif. K1 ...7.65
FranklinPark,Ill. T6 ...5.85
Ind.Harbor,Ind. I-2 ...5.85
Ind.Harbor,Ind. Y1 ...5.75
Indianapolis C8 ...5.90
Lackawanna,N.Y. B2 ...5.75
LosAngeles C1 ...7.80
Middletown,O. A10 ...5.75
NewBedford,Mass. R10 ...6.20
NewBritain(10) S15 ...5.75
NewCastle,Pa. B4, E5 ...5.75
NewHaven,Conn. A7 ...6.50
NewHaven,Conn. D2 ...6.20
NewKensington,Pa. A6 ...5.75
Pawtucket,R.I. R3 ...6.40
Pawtucket,R.I. N8 ...6.30
Pittsburgh J5 ...5.75
Portsmouth,O. P12 ...5.75
Riverdale,Ill. A1 ...5.85
Rome,N.Y.(32) R6 ...5.75
Sharon,Pa. S3 ...5.75
SparrowsPt.,Md. B2 ...5.75
Trenton,N.J.(31) R5 ...7.30
Wallingford,Conn. W2 ...6.20
Warren,O. B9, R2, T5 ..5.75
Weirton,W.Va. W6 ...5.75
Worcester,Mass. A7 ...6.60
Youngstown C8, Y1 ...5.75

STRIP, Cold-Rolled Alloy

Boston T6 ...12.80
Carnegie,Pa. S18 ...12.45
Cleveland A7 ...12.45
Dover,O. G6 ...12.45
Fontana,Calif. K1 ...14.55
FranklinPark,Ill. T6 ...12.45
Harrison,N.J. C18 ...12.45
Pawtucket,R.I. N8 ...12.80
Sharon,Pa. S3 ...12.45
Worcester,Mass. A7 ...12.75
Youngstown C8 ...12.90

STRIP, Cold-Rolled High-Strength Low-Alloy

Cleveland A7, J5 ...8.60
Dearborn,Mich. D2 ...8.70
Dover,O. G6 ...8.60
Ecorse,Mich. G5 ...8.70
Ind.Harbor,Ind. Y1 ...8.60
Lackawanna,N.Y. B2 ..8.425

STRIP, Cold-Finished Spring Steel (Annealed)

	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Baltimore T6	5.75	8.35	9.30	11.45	14.15
Boston T6	6.30	8.35	9.30	11.45	14.15
Bristol,Conn. W1	...	...	9.30	11.45	....
Carnegie,Pa. S18	...	8.05	9.00	11.15	13.85
Cleveland A7	5.75	8.05	9.00	11.15	13.85
Cleveland C7	...	8.05	9.00	11.15	13.85
Dearborn,Mich. D2	5.85	8.25	9.20	....	....
Detroit D2	5.85	8.25	9.20	10.95	....
Dover,O. G6	5.85	8.05	9.00	11.15	13.85
FranklinPark,Ill. T6	5.85	8.05	9.00	11.15	13.85
Harrison,N.J. C18	...	...	9.30	11.45	14.15
Indianapolis C8	6.00	8.20	9.00	11.15	13.85
NewBritain,Conn.(10) S15	5.75	8.05	9.00	11.15	13.85
NewCastle,Pa. B4	5.75	8.05	9.00	11.15	....
NewCastle,Pa. E5	5.75	8.05	9.00	11.15	13.85
NewHaven,Conn. D2	6.20	8.35	9.30	11.25	....
NewKensington,Pa. A6	5.75	8.05	9.00	11.15	....
NewYork W3	...	8.35	9.30	11.45	14.15
Pawtucket,R.I. N8	6.30	8.35	9.30	11.45	14.15
Riverdale,Ill. A1	5.85	8.05	9.00	11.15	13.85
Rome,N.Y.(32) R6	5.75	8.05	9.00	10.95	13.25
Sharon,Pa. S3	5.75	8.05	9.00	11.15	13.85
Trenton,N.J. R5	...	8.35	9.30	11.45	14.15
Wallingford,Conn. W2	6.20	8.35	9.30	11.45	14.15
Warren,O. T5	5.75	8.05	9.00	11.15	13.85
Weirton,W.Va. W6	5.75	8.05	9.00	11.15	13.85
Worcester,Mass. A7, T6	6.60	8.35	9.30	11.45	14.15
Youngstown C8	5.85	8.05	9.00	11.15	13.85
Spring Steel (Tempered)					
Bristol,Conn. W1	...	...	12.90	15.60	....
Buffalo W12	...	...	12.90	....	....
FranklinPark,Ill. T6	...	...	13.40	16.10	19.50
Harrison,N.J. C18	...	...	12.90	15.60	19.00
NewYork W3	...	...	12.90	15.60	19.00
Trenton,N.J. R5	...	...	12.90	15.60	19.00
Worcester,Mass. A7, T6	...	...	12.90	15.60	19.00
Worcester,Mass. W12	...	...	12.90	....	....
Youngstown C8	...	...	13.25	15.95	19.35

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2 ...6.35

STRIP, Electrogalvanized

Cleveland A7 ...5.75*
Dover,O. G6 ...5.75*
Riverdale,Ill. A1 ...5.85*
Youngstown C8 ...5.75*
Warren,O. B9, T5 ...5.75*
Weirton,W.Va. W6 ...5.75*
Worcester,Mass. A7 ...6.60*

*Plus galvanizing extras.

Strip, Galvanized (Continuous)

Sharon,Pa. S3 ...6.15
Warren,O. B9 ...6.15

TIGHT COOPERAGE HOOP

Atlanta A11 ...4.775
Riverdale,Ill. A1 ...4.625
Sharon,Pa. S3 ...4.475
Youngstown U5 ...4.475

SILICON STEEL

H.R. SHEETS (22 Ga., cut lengths)	Field	Armature	Electric	Motor	Dynamo
BeechBottom,W.Va. W10	....	....	9.10	10.10	11.00
Brackenridge,Pa. A4	....	....	9.10	10.10	11.00
Mansfield,O. E8	8.025	8.50	9.10	10.10	11.00
Newport,Ky. N9	8.025	8.50	9.10	10.10	11.00
Niles,O. N12	8.025	8.50	9.10	10.10	....
Vandergrift,Pa. U5	....	8.50	9.10	10.10	11.00
Warren,O. R2	8.025	8.50	9.10	10.10	11.00
Zanesville,O. A10	....	8.50	9.10	10.10	11.00

C.R. COILS & CUT LENGTHS, (22 Ga.) Fully Processed (Semiprocessed ½c lower)	Field	Armature	Electric	Motor	Dynamo
Brackenridge,Pa. A4	....	....	9.85	10.85	11.75
GraniteCity,Ill. G4	8.425*	8.95*	9.55*	10.55*	....
IndianaHarbor,Ind. I-2	8.225	8.75*	9.35*	....	....
Vandergrift,Pa. U5	....	9.25†	9.85†	10.85†	11.75†
Vandergrift,Pa. U5	8.225*	8.75*	9.35*	10.35*	11.25*
Warren,O. R2	8.225†	9.25	9.85	10.85	11.75
Zanesville,O. A10	....	9.25	9.85	10.85	11.75

H.R. SHEETS (22 Ga., cut lengths)	Transformer Grade T-72	T-65	T-58	T-52
BeechBottom,W.Va. W10	11.95	12.50	13.00	14.00
Brackenridge,Pa. A4	11.96	....	....	....
Newport,Ky. N9	11.95	....	....	....
Vandergrift,Pa. U5	11.96	12.50	13.00	14.00
Zanesville,O. A10	11.95‡	12.50‡	13.00‡	14.00‡

C.R. COILS & CUT LENGTHS (22 Ga.)	Grain Oriented T-100	T-90	T-80	T-73	T-72
Brackenridge,Pa. A4	....	15.00	16.60	17.10	....
Butler,Pa. A10	....	....	16.60	17.10	....
Vandergrift,Pa. U5	14.00	15.00	16.60	17.10	12.70
Warren,O. R2	....	....	....	....	12.70‡

* Semiprocessed, † Fully processed only, ‡ Coils annealed; semiprocessed ½c lower, ‖ Coils, ¾-cent higher.

TIN MILL PRODUCTS

TIN PLATE Electrolytic (Base Box)	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$7.50	$7.75	$8.15
Fairfield,Ala. T2	7.60	7.85	8.25
FairlessHills,Pa. U5	7.60	7.85	8.25
Gary,Ind. U5	7.50	7.75	8.15
GraniteCity,Ill. G4	7.60	7.85	8.25
IndianaHarbor,Ind. I-2, Y1	7.50	7.75	8.15
Irvin,Pa. U5	7.50	7.75	8.15
Niles,O. R2	7.50	7.75	8.15
Pittsburg,Calif. C11	8.25	8.50	8.90
SparrowsPoint,Md. B2	7.60	7.85	8.25
Weirton,W.Va. W6	7.50	7.75	8.15
Yorkville,O. W10	7.50	7.75	8.15

ELECTROTIN (22-27 Gage; Dollars per 100 lb)

Aliquippa,Pa. J5	6.175	....	....
Niles,O. R2	6.175	6.375	6.575

TINPLATE,American Coke (Base Box)	1.25 lb	1.50 lb
Aliquippa,Pa. J5	$8.80	$9.05
Fairfield,Ala. T2	8.90	9.15
Fairless,Pa. U5	8.90	9.15
Gary,Ind. U5	8.80	9.05
Ind.Har. I-2, Y1	8.80	9.05
Irvin,Pa. U5	8.80	9.05
Pitts.Cal. C11	9.55	9.80
Sp.Pt.,Md. B2	8.90	9.15
Warren,O. R2	8.90	9.05
Weirton,W.Va. W6	8.80	9.05
Yorkville,O. W10	8.80	9.05

BLACK PLATE (Base Box)

Aliquippa,Pa. J5	$6.60
Fairfield,Ala. T2	6.70
FairlessHills,Pa. U5	6.70
Gary,Ind. U5	6.60
GraniteCity,Ill. G4	6.70
Ind.Harbor,Ind. I-2, Y1	6.60
Irwin,Pa. U5	6.60
Niles,O. R2	6.60
Pittsburg,Calif. C11	7.35
SparrowsPoint,Md. B2	6.70
Warren,O. R2	6.60
Weirton,W.Va. W6	6.60
Yorkville,O. W10	6.60

HOLLOWARE ENAMELING Black Plate (29 gage)

Follansbee,W.Va. F1	6.20
Gary,Ind. U5	6.20
GraniteCity,Ill. G4	6.30
Ind.Harbor,Ind. Y1	6.20
Irvin,Pa. U5	6.20
Yorkville,O. W10	6.20

MANUFACTURING TERNES (Special Coated; Base Box)

Gary,Ind. U5	$7.85
Irvin,Pa. U5	7.85
Yorkville,O. W10	7.85

MANUFACTURING TERNES (Light Coated, 6 lb; Base Box)

Yorkville,O. W10	$8.75

ROOFING SHORT TERNES (8 lb Coated)

Gary,Ind. U5	9.85

WIRE

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity,Ala. R2 ...5.75
Aliquippa,Pa. J5 ...5.75
Alton,Ill. L1 ...5.925
Atlanta A11 ...5.95
Bartonville,Ill. K4 ...5.85
Buffalo W12 ...5.75
Chicago W13 ...5.75
Cleveland A7, C20 ...5.75
Crawfordsville,Ind. M8 ..5.85
Donora,Pa. A7 ...5.75
Duluth,Minn. A7 ...5.75
Fairfield,Ala. T2 ...5.75
Fostoria,O.(24) S1 ...5.95
Houston S5 ...6.00
Jacksonville,Fla. M8 ...6.27
Johnstown,Pa. B2 ...5.75
Joliet,Ill. A7 ...5.75
KansasCity,Mo. S5 ...6.00
Kokomo,Ind. C16 ...5.85
LosAngeles B3 ...6.70
Minnequa,Colo. C10 ...6.00
Monessen,Pa. P7 ...5.75
Newark 6-8 ga. I-1 ...6.40
No.Tonawanda B11 ...5.75
Palmer,Mass. W12 ...6.05
Pittsburg,Calif. C11 ...6.70
Portsmouth,O. P12 ...5.75
Rankin,Pa. A7 ...5.75
So.Chicago,Ill. R2 ...5.75
So.SanFrancisco C10 ...6.70
SparrowsPoint,Md. B2 ..5.85
Sterling,Ill.(1) N15 ...5.75
Sterling,Ill. N15 ...5.85
Struthers,O. Y1 ...5.75
Waukegan,Ill. A7 ...5.75
Worcester,Mass. A7 ...6.05

WIRE, MB Spring, High Carbon

Aliquippa,Pa. J5 ...7.20
Alton,Ill. L1 ...7.375
Bartonville,Ill. K4 ...7.30
Buffalo W12 ...7.20
Cleveland A7 ...7.20
Donora,Pa. A7 ...7.20
Duluth,Minn. A7 ...7.20
Fostoria,O. S1 ...7.20
Johnstown,Pa. B2 ...7.20
LosAngeles B3 ...8.15
Milbury,Mass.(12) N6 ...7.50
Minnequa,Colo. C10 ...7.45
Monessen,Pa. P7, P16 ..7.20
Muncie,Ind. I-7 ...7.40
Palmer,Mass. W12 ...7.50
Pittsburg,Calif. C11 ...8.15
Portsmouth,O. P12 ...7.20
Roebling,N.J. R5 ...7.50
So.Chicago,Ill. R2 ...7.20
So.SanFrancisco C10 ...8.15
SparrowsPt.,Md. B2 ...7.30
Struthers,O. Y1 ...7.20
Trenton,N.J. A7 ...7.50
Waukegan,Ill. A7 ...7.20
Worcester A7,J4,T6,W12 7.50

WIRE, Upholstery Spring

Aliquippa,Pa. J5 ...6.90
Alton,Ill. L1 ...7.075
Buffalo W12 ...6.90
Cleveland A7 ...6.90
Donora,Pa. A7 ...6.90
Duluth,Minn. A7 ...6.90
Johnstown,Pa. B2 ...6.90
KansasCity,Mo. S5 ...7.50
LosAngeles B3 ...7.85
Minnequa,Colo. C10 ...7.075
Monessen,Pa. P7, P16, .6.90
NewHaven,Conn. A7 ...7.20
Palmer,Mass. W12 ...7.20
Pittsburg,Calif. C11 ...7.85
Portsmouth,O. P12 ...6.90
Roebling,N.J. R5 ...7.20
So.Chicago,Ill. R2 ...6.90
So.SanFrancisco C10 ...7.85
SparrowsPoint,Md. B2 ..7.00
Struthers,O. Y1 ...6.90
Trenton,N.J. A7 ...7.20
Waukegan,Ill. A7 ...6.90
Worcester,Mass. A7 ...7.20

WIRE, Fine & Weaving(8" Coils)

Alton,Ill. L1 ...11.375
Bartonville,Ill. K4 ...11.30
Buffalo W12 ...11.20
Chicago W13 ...11.20
Cleveland A7 ...11.20
Crawfordsville,Ind. M8..11.30
Fostoria,O. S1 ...11.20
Jacksonville,Fla. M8 ..11.73
Johnstown,Pa. B2 ...11.20
Kokomo,Ind. C16 ...11.20
Minnequa,Colo. C10 ...10.95
Monessen,Pa. P16 ...11.20
Muncie,Ind. I-7 ...11.40
Palmer,Mass. W12 ...11.50
Roebling,N.J. R5 ...11.50
So.SanFrancisco C10 ..11.55
Waukegan,Ill. A7 ...11.20
Worcester,Mass. A7,T6 11.50

WIRE, Galv'd ACSR for Cores

Bartonville,Ill. K4 ...9.90
Buffalo W12 ...9.90
Johnstown,Pa. B2 ...9.90
Minnequa,Colo. C10 ..10.025
Monessen,Pa. P16 ...9.90
Muncie,Ind. I-7 ...10.10
Portsmouth,O. P12 ...9.90
Roebling,N.J. R5 ...10.20
SparrowsPt.,Md. B2 ...10.00

ROPE WIRE (A)

Alton,Ill. L1 ...9.75
Bartonville,Ill. K4 ...9.75
Buffalo W12 ...9.75
Fostoria,O. S1 ...9.75
Johnstown,Pa. B2 ...9.75
Monessen,Pa. P7, P16 ..9.75
Muncie,Ind. I-7 ...9.95
Palmer,Mass. W12 ...10.05
Portsmouth,O. P12 ...9.75
Roebling,N.J. R5 ...10.05
SparrowsPt, B2 ...9.85
Struthers,O. Y1 ...9.75
Worcester J4, T6 ...9.65

(A) Plow and Mild Plow; add 0.25c for Improved Plow.

WIRE

(Continued)

WIRE, Tire Bead

Alton,Ill. L1	13.25
Bartonville,Ill. K4	13.25
Monessen,Pa. P16	13.15
Portsmouth,O. P12	13.15
Roebling, N.J. R5	13.45

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	7.95
Baltimore T6	8.25
Buffalo W12	7.95
Cleveland A7	7.95
Crawfordsville,Ind. M8	8.05
Dover,O. G6	7.95
Fostoria,O. S1	7.95
FranklinPark,Ill. T6	8.05
Kokomo,Ind. C16	8.05
Massillon,O. R8	7.95
Milwaukee C23	8.15
Monessen,Pa. P7, P16	7.95
Pawtucket,R.I. N8	8.25
Rome,N.Y.(32) R6	7.95
Trenton,N.J. R5	8.25
Worcester A7, T6, W12	8.25

WIRE, Merchant Quality

(6 to 8 gage)	An'ld Galv.
Ala.City,Ala. R2	6.90 7.30**
Aliquippa J5	6.90 7.425‡
Atlanta A11	7.00 7.55
Bartonville(48) K4	7.00 7.55
Buffalo W12	6.90 7.30†
Cleveland A7	6.90
Crawfordsville M8	7.00 7.55
Donora,Pa. A7	6.90 7.30†
Duluth,Minn. A7	6.90 7.30†
Fairfield T2	6.90 7.30†
Houston,Tex. S5	7.15 7.55†
Jacks'ville,Fla. M8	7.425 7.95
JohnstownB2(48)	6.90 7.45*
Joliet,Ill. A7	6.90 7.30†
KansasCity,Mo. S5	7.15 7.55†
Kokomo C16	7.00 7.40†
LosAngeles B3	7.85
Minnequa C10	7.15 7.55**
Monessen P7 (48)	6.90 7.45
Palmer W12	7.20 7.60†
Pitts.,Calif. C11	7.85 8.20†
Portsmouth,O. P12	6.90
Rankin A7	6.90 7.30†
So.Chicago R2	6.90 7.30**
S.S.Fran. C10	7.85 8.25**
SparrwsPt.B2(48)	7.00 7.55*
Sterling(1)(48)N15	6.90 7.45
Struthers,O.(48)Y1	6.90 7.40‡
Worcester A7	7.20

*Based on 11c zinc; †5c zinc; ‡Less than 10c zinc; **Subject to zinc equalization extras.

WOVEN Fence, 9-15½ Ga. — Col.

Ala.City,Ala. R2	146**
Ala.City, 17 ga. R2	241**
Ala.City, 18 ga. R2	251**
Aliq'ppa,Pa.9-14½ga.J5	149‡
Atlanta A11	151
Bartonville,Ill. K4	151
Crawfordsville,Ind. M8	151
Donora,Pa. A7	146†
Duluth,Minn. A7	146†
Fairfield,Ala. T2	146†
Houston,Tex. S5	151†
Johnstown,Pa.(43) B2	149
Joliet,Ill. A7	146†
KansasCity,Mo. S5	151†
Kokomo,Ind. C16	148†
Minnequa,Colo. C10	151**
Monessen,Pa. 9 ga. P17	149
Pittsburg,Calif. C11	169†
Rankin,Pa. A7	146†
So.Chicago,Ill. R2	146**
Sterling,Ill.(1) N15	149

†Based on 8c zinc; *11c zinc; ‡10c zinc; **Subject to zinc equalization extras.

BALE TIES, Single Loop — Col.

AlabamaCity,Ala. R2	155
Atlanta A11	157
Bartonville,Ill. K4	157
Crawfordsville,Ind. M8	157
Donora,Pa. A7	155
Duluth,Minn. A7	155
Fairfield,Ala. T2	155
Joliet,Ill. A7	155
Houston S5	160
KansasCity,Mo. S5	160
Kokomo,Ind. C16	157
Minnequa,Colo. C10	160
Pittsburg,Calif. C11	179
So.Chicago,Ill. R2	155
So.SanFran.,Calif. C10	179
SparrowsPoint,Md. B2	157
Sterling,Ill.(1) N15	155

WIRE, Barbed — Col.

AlabamaCity,Ala. R2	159**
Aliquippa J5	154‡
Atlanta A11	164
Bartonville,Ill. K4	164
Crawfordsville,Ind. M8	164
Donora,Pa. A7	159†
Duluth,Minn. A7	159†
Fairfield,Ala. T2	159†
Houston,Tex. S5	164†
Johnstown,Pa. B2	162*
Joliet,Ill. A7	159†
KansasCity,Mo. S5	164†
Kokomo,Ind. C16	161†
Minnequa,Colo. C10	164**
Monessen,Pa. P7	162
Pittsburg,Calif. C11	179†
Rankin,Pa. A7	159†
So.Chicago,Ill. R2	159**
S.SanFrancisco C10	179**
SparrowsPoint,Md. B2	164*
Sterling,Ill.(1) N15	162

†Based on 8s zinc; *11c zinc; ‡10c zinc; **Subject to zinc equalization extras.

WIRE (16 gage)

	An'ld Galv.	Stone Stone
Ala.City R2	13.15	14.70**
Bartonville K4	13.25	15.10
Buffalo W12	13.15	
Cleveland A7	13.15	
Crawfrdsville M8	13.25	15.10
Fostoria,O. S1	13.25	14.80†
Johnstown B2	13.15	15.00*
Kokomo C16	13.25	14.80†
Minnequa C10	13.40	15.10**
Palmer,Mas.W12	13.15	14.70†
Pitts.,Calif. C11	13.50	15.05†
So.Chicago R2	13.15	14.70
SparrowsPt. B2	13.25	15.10*
Sterling(1) N15	13.15	15.00
Waukegan A7	13.15	14.70†
Worcester A7	13.45	

*Based on 11c zinc; †5c zinc; ‡10c zinc; **Subject to zinc equalization extras.

NAILS, Stock

To dealers & mfrs. (7)	Col.
AlabamaCity,Ala. R2	137
Aliquippa,Pa. J5	137
Atlanta A11	139
Bartonville,Ill. K4	139
Chicago,Ill. W13	137
Cleveland A9	142
Crawfordsville,Ind. M8	139
Donora,Pa. A7	137
Duluth,Minn. A7	137
Fairfield,Ala. T2	137
Galveston,Tex. D7	139
Houston,Tex. S5	142
Johnstown,Pa. B2	137
Joliet,Ill. A7	137
KansasCity,Mo. S5	142
Kokomo,Ind. C16	139
Minnequa,Colo. C10	142
Monessen,Pa. P7	137
Pittsburg,Calif. C11	156
Rankin,Pa. A7	137
So.Chicago,Ill. R2	137
SparrowsPt.,Md. B2	139
Sterling,Ill.(1) N15	137
Worcester,Mass. A7	143

NAILS, CUT (100 lb keg)

To dealers (33)	
Conshohocken,Pa. A3	$8.30
Wheeling,W.Va. W10	8.30

STAPLES, Polished Stock

To dealers & mfrs. (7)	Col.
Aliquippa,Pa. J5	138
Atlanta A11	140
Bartonville,Ill. K4	139
Crawfordsville,Ind. M8	139
Donora,Pa. A7	138
Duluth,Minn. A7	138
Fairfield,Ala. T2	138
Johnstown,Pa. B2	138
Joliet,Ill. A7	138
Kokomo,Ind. C16	139
Minnequa,Colo. C10	142
Monessen,Pa. P7	137
Pittsburg,Calif. C11	157
Rankin,Pa. A7	138
SparrowsPt., Md. B2	140
Sterling,Ill.(1) N15	137
Worcester,Mass. A7	144

TIE WIRE, Automatic Baler (14½ Ga.) (Per 97 lb Net Box)

Coil No. 3150	
Donora,Pa. A7	$8.77
Duluth,Minn. A7	8.77
Joliet,Ill. A7	8.77
Coil No. 6500 Stand.	
Donora,Pa. A7	$9.05
Duluth,Minn. A7	9.05
Joliet,Ill. A7	9.05
Coil No. 6500 Interim	
Donora,Pa. A7	$9.10
Duluth,Minn. A7	9.10
Joliet,Ill. A7	9.10

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS

(Base discounts, per cent off list, f.o.b. midwestern plants)

4 in. and shorter:	
½-in. & smaller diam	2
Over 4 in. through 6 in.:	
⅝ in. & smaller diam	+3
6 in. and shorter:	
⅞-in. and ¾-in.	+4
⅞ in. and larger	+6
Longer than 6 in.:	
All diameters	+15
Lag bolts, all diams.:	
6 in. and shorter	6
Over 6 in. long	+2
Ribbed Necked Carriage	+4
Blank	10
Plow	23
Step, Elevator, Tap and Sleigh Shoes	10
Tire Bolts	+3
Boiler & Fitting-Up Bolts	21

NUTS

H.P. and C.P., regular & heavy:	
Square, all sizes	55
H.P., Hex, regular & heavy:	
⅝" and smaller	55
⅝" to 1⅛", inclusive	58
1⅛" to 1½", inclusive	60
1⅝" and larger	63
C.P. Hex regular & heavy:	
All sizes	56
Hot Galv. Nuts (all types):	
⅝" or smaller	38
⅝" to 1½", inclusive	41
Finished Hex Nuts:	
New standard, all sizes	55
Semifinished & Slotted Hex:	
Regular and heavy, all sizes	55

SQUARE HEAD SET SCREWS

(1035 steel; packaged; per cent off list)

1 in. diam. x 6 in. and shorter	34
1 in. and smaller diam. x over 6 in.	20

HEADLESS SET SCREWS

(Packaged; per cent off list)

No. 10 and smaller	34
¼ in. diam. & larger	14
N.F. thread, all diams.	8

STEEL STOVE BOLTS

(F.o.b. plant, per cent off list in packages)

Plain finish	43
Plated finishes	23

HEXAGON CAP SCREWS

(1020 steel; packaged; per cent off list)

6 in. or shorter:	
¼ in. through ⅝-in.	38
¾-in. through 1 in.	15
Longer than 6 in.:	
¼-in. through ⅝-in.	20
⅝-in. through 1 in.	7

RIVETS

F.o.b. Cleveland, and/or freight equalized with Pittsburgh, f.o.b. Chicago, and/or freight equalized with Birmingham except where equalization is too great.

Structural ½-in., larger 9.25
⅞-in. under..List less 37%

WASHERS, WROUGHT

F.o.b. shipping point, to jobbers ..... List

BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft, inclusive.

O.D. In.	B.W. Gage	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
1	13	....	19.59	19.00
1¼	13	....	23.21	18.77
1½	13	21.40	25.65	20.75
1⅝	13	25.28	30.31	24.52
2	13	23.33	33.97	27.48
2¼	13	31.91	38.26	30.95
2½	12	34.63	41.52	33.59
2½	12	38.15	45.74	37.00
2¾	12	41.31	49.53	40.07
3	12	44.05	52.82	42.72

RAILWAY MATERIALS

RAILS	Standard No. 1	Standard No. 2	All No. 2	Tee Rails 60 lb Under
Bessemer, Pa. U5	4.45	4.35	4.40	5.35
Ensley,Ala. T2	4.45	4.35	...	5.35
Fairfield,Ala. T2	...	...	...	5.35
Gary,Ind. U5	4.45	4.35	4.40	...
IndianaHarbor,Ind. I-2	4.45	4.35	4.40	...
Johnstown,Pa. B2	...	...	...	(16)5.35
Lackawanna,N.Y. B2	4.45	4.35	...	5.35
Minnequa,Colo. C10	4.45	4.35	...	5.85
Steelton,Pa. B2	4.45	4.35	...	5.35
Williamsport,Pa. S10	...	...	...	5.35

TIE PLATES

Fairfield,Ala. T2	5.275
Gary,Ind. U5	5.275
Ind.Harbor,Ind. I-2	5.275
Lackawanna,N.Y. B2	5.275
Minnequa,Colo. C10	5.275
Seattle B3	5.425
Steelton,Pa. B2	5.275
Torrance,Calif. C11	5.425

TRACK BOLTS (20) Treated

Cleveland R2	11.50
KansasCity,Mo. S5	11.50
Lebanon,Pa. B2	11.50
Minnequa,Colo. C10	11.50
Pittsburgh G3, P14	11.50
Seattle B3	13.00

AXLES

Ind.Harbor,Ind. S13	6.75
Johnstown,Pa. B2	6.75

JOINT BARS

Bessemer,Pa. U5	5.425
Fairfield,Ala. T2	5.425
Ind.Harbor,Ind. I-2	5.425
Joliet,Ill. U5	5.425
Lackawanna,N.Y. B2	5.425
Minnequa,Colo. C10	5.425
Steelton,Pa. B2	5.425

SCREW SPIKES

Cleveland R2	11.00

STANDARD TRACK SPIKES

Fairfield,Ala. T2	7.30
Ind.Harbor,Ind. I-2, Y1	7.30
KansasCity,Mo. S5	7.30
Lebanon,Pa. B2	7.30
Minnequa,Colo. C10	7.30
Pittsburgh J5	7.30
Seattle B3	7.80
So.Chicago,Ill. R2	7.30
Struthers,O. Y1	7.30
Youngstown R2	7.30

METAL POWDERS

(Per pound, f.o.b. shipping point in ton lots for minus 100 mesh, except as otherwise noted)

	Cents
Sponge iron: 98+% Fe, annealed	15.25
Unannealed:	
Minus 100 mesh	11.75
Minus 35 mesh	9.25
Minus 20 mesh	9.00
Swedish, c.l.f. N.Y., c.l., in bags	11.25
Domestic (Swedish), f.o.b. Riverton, N. J., in bags	9.50
Electrolytic iron:	
Melting stock, 99.91% Fe, irregular fragments of ¼ in. x 1.3 in.	22.00
Annealed, 99.5% Fe.	36.50
Unannealed (99+% Fe)	32.50
Unannealed (99+% Fe) (minus 325 mesh)	52.00
Powder Flakes (minus 16, plus 100 mesh)	31.00
Carbonyl Iron: 97.9-99.8% size 5 to 10 microns—83.00-148.00	
Aluminum: Atomized, 500 lb drums, frght. allowed:	
Carlots	30.00
Ton lots	32.00
Antimony, 500 lb lots	32.00*
Brass, 5000-lb lots	29.75-37.25†
Bronze, 5000-lb lots	48.75-52.00†
Copper:	
Electrolytic	13.75*
Reduced	13.75*
Lead	7.50*
Manganese:	
Minus 35 mesh	61.00
Minus 100 mesh	67.00
Minus 200 mesh	72.00
Nickel, unannealed	94.00
Nickel-Silver, 5000-lb lots	45.50‡
Nickel-Silver, 5000-lb lots	49.00**
Phosphor-Bronze, ¼-ton lots	58.50
Silicon	43.50
Solder	7.00*
Stainless Steel, 302	91.00
Tin	14.50*
Zinc, 5000-lb lots	17.25-31.00†
Tungsten	Dollars
Melting grade, 99% 60 to 200 mesh:	
1000 lb and over	4.95
Less than 1000 lb	5.10
Chromium, electrolytic 99.2% Cr min.	3.50

*Plus cost of metal. †Depending on composition. ‡Depending on mesh. §70% Cu, 20% Zn, 10% Ni; **64% Cu, 18% Zn, 18% Ni.

Footnotes

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(5) 1¼" to 1 7/16"; 1 7/16" to 1 15/16" 4.75c; 1 15/16" to 7 5/16" 5.15c.
(6) Chicago or Birm. base.
(7) To jobbers, 3 cols. lower.
(8) 16 gage and heavier.
(9) 6 in. and narrower.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass., base.
(13) Add 0.25c for 17 Ga. & heavier.
(14) Gage 0.143 to 0.249 in.; for gage 0.142 and lighter, 5.80c.
(15) ⅝" and thinner.
(16) 40 lb and under.
(17) Flats only; 0.25 in. & heavier.
(18) To dealers.
(19) Chicago & Pitts. base.
(20) 0.25 off for untreated.
(21) New Haven, Conn., base.
(22) Del. San Francisco Bay area.
(23) 20 Ga. 36" wide.
(24) Deduct 0.10c, finer than 15 Ga.
(25) Bar mill bands.
(26) Reinforcing mill lengths, to fabricators; to consumers, 4.95c.
(27) Bar mill sizes.
(28) Bonderized.
(29) Youngstown base.
(30) Sheared; for universal mill add 0.45c for carbon, add 0.40c for alloy and 0.35c H.S.-L.A.
(31) Widths over ⅝-in.; 6.40c for widths ⅝-in. and under by 0.125 in. and thinner.
(32) Buffalo base.
(33) To jobbers, deduct 20c.
(34) 0.60c for cut lengths.
(35) 72" and narrower.
(36) 14" and narrower.
(37) 13 gage & heavier; 60" & narrower.
(38) 14 gage & lighter; 48" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.
(41) 9.10c for cut lengths.
(42) Mill lengths, f.o.b. mill; deld. to mill zone or within switching limits, 5.10c.
(43) 9-14½ gage.
(48) 6-7 gage.

SEAMLESS STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	2		2½		3		3½		4		5		6	
List Per Ft	37c		55.5c		76.5c		92c		$1.09		$1.48		$1.93	
Pounds Per Ft	3.65		5.82		7.62		9.20		10.89		14.81		19.18	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	13.5	+3	17.5	+0.25	20	2.25	21.5	3.75	21.5	3.75	20.75	3	23.25	5.5
Ambridge, Pa. N2	13.5	..	17.5	...	20	...	21.5	...	21.5	...	20.75	...	23.25	...
Lorain, O. N3	13.5	+3	17.5	+0.25	20	2.25	21.5	3.75	21.5	3.75	20.75	3	23.25	5.5
Youngstown Y1	13.5	+3	17.5	+0.25	20	2.25	21.5	3.75	21.5	3.75	20.75	3	23.25	5.5

ELECTRIC WELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Youngstown R2	13.5	+3	17.5	+0.25	20	2.25	21.5	3.75	21.5	3.75	20.75	3	23.25	5.5

BUTTWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	⅛		¼		⅜		½		¾		1		1¼	
List Per Ft	5.5c		8c		6c		8.5c		11.5c		17c		23c	
Pounds Per Ft	0.24		0.42		0.57		0.85		1.13		1.68		2.36	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	...	...	....	....	....	....	23.75	6.5	26.75	10.5	29.25	14	31.75	15.25
Alton, Ill. L1	...	...	....	....	....	....	21.75	4.5	24.75	8.5	27.25	12	29.75	13.25
Benwood, W. Va. W10	24	+4.5	15.25	+10.25	7.25	+17.25	23.75	6.5	26.75	10.5	29.25	14	31.75	15.25
Butler, Pa. F6	25	+3.5	17	+8.5	9.5	+15	....	..	....	...	....	..	....	....
Etna, Pa. N2	...	...	....	....	....	....	23.75	6.5	26.75	10.5	29.25	14	31.75	15.25
Fairless Hills, Pa. N3	...	...	....	....	....	....	21.75	4.5	24.75	8.5	27.25	12	29.75	13.25
Fontana, Calif. K1	...	...	....	....	....	....	10.75	+6.5	13.75	+2.5	16.25	1	18.75	2.25
Ind. Harbor, Ind. Y1	...	...	....	....	....	....	22.75	5.5	25.75	9.5	28.25	13	30.75	14.25
Lorain, O. N3	...	...	....	....	....	....	23.75	6.5	26.75	10.5	29.25	14	31.75	15.25
Sharon, Pa. S4	25	+3.5	17	+8.5	9.5	+15	....	..	....	...	....	..	....	....
Sharon, Pa. M6	...	...	....	....	....	....	23.75	6.5	26.75	10.5	29.25	14	31.75	15.25
Sparrows Pt., Md. B2	23	+5.5	15	+10.5	7.5	+17	21.75	4.5	24.75	8.5	27.25	12	29.75	13.25
Youngstown R2, Y1	...	...	....	....	....	....	23.75	6.5	26.75	10.5	29.25	14	31.75	15.25
Wheatland, Pa. W9	23	+5.5	15	+10.5	7.5	+17	23.75	6.5	26.75	10.5	29.25	14	31.75	15.25

Size—Inches	1½		2		2½		3		3½		4	
List Per Ft	27.5c		37c		58.5c		76.5c		92c		$1.09	
Pounds Per Ft	2.73		3.66		5.82		7.62		9.20		10.89	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	32.25	16.25	32.75	16.75	34.25	17	34.25	17	....	...	....	...
Alton, Ill. L1	30.25	14.25	30.75	14.75	32.25	15	32.25	15	....	...	....	...
Benwood, W. Va. W10	32.25	16.25	32.75	16.75	34.25	17	34.25	17	25.5	7.75	25.5	7.75
Etna, Pa. N2	32.25	16.25	32.75	16.75	34.25	17	34.25	17	25.5	7.75	25.5	7.75
Fairless Hills, Pa. N3	30.25	14.25	30.75	14.75	32.25	15	32.25	15	23.5	5.75	23.5	5.75
Fontana, Calif. K1	19.25	3.25	19.75	3.75	21.25	4	21.25	4	12.5	+5.25	12.5	+5.25
Ind. Harbor, Ind. Y1	31.25	15.25	31.75	15.75	33.25	16	33.25	16	24.5	6.75	25.5	6.75
Lorain, O. N3	32.25	16.25	32.75	16.75	34.25	17	34.25	17	....	...	....	...
Sharon, Pa. M6	32.25	16.25	32.75	16.75	34.25	17	34.25	17	....	...	....	...
Sparrows Pt., Md. B2	30.25	14.25	30.75	14.75	32.25	15	32.25	15	23.5	5.75	23.5	5.75
Youngstown R2, Y1	32.25	16.25	32.75	16.75	34.25	17	34.25	17	25.5	7.75	25.5	7.75
Wheatland, Pa. W9	32.25	16.25	32.75	16.75	34.25	17	34.25	17	25.5	7.75	25.5	7.75

*Galvanized pipe discounts based on current price of zinc (11.50c, East St. Louis).

Stainless Steel

(Representative prices, cents per pound; subject to current lists of extras)

AISI Type	Rerolling Ingots	Rerolling Slabs, Billets	Forging Billets	Seamless Tube Billets	Shapes; H.R. & C.F. H.R. Strip	Shapes; H.R. & C.F. Bars; Wire	Plates	Sheets	C.R. Strip; Flat	C.R. Strip; Wire
301	16.75	21.00	30.00	34.75	30.25	35.75	37.75	41.75	38.75	
302	17.75	23.25	30.25	35.00	32.50	36.00	38.00	42.00	42.00	
302B	19.00	25.00	31.00	35.00	35.50	36.00	38.00	45.25	45.25	
303	....	25.25	32.75	37.75	....	38.75	40.25	46.00	46.00	
304	19.00	24.50	31.75	36.75	35.00	38.00	40.50	44.50	44.50	
304L	....	....	36.75	41.75	40.00	43.00	45.50	49.50	49.50	
306	20.50	26.50	33.50	37.25	38.00	38.00	41.00	47.50	47.50	
308	20.75	27.25	36.25	41.75	39.00	45.00	47.00	49.00	49.00	
309	27.75	36.00	44.00	50.50	50.50	51.75	55.00	63.25	63.25	
309S	29.75	38.75	48.00	55.75	55.25	58.75	60.25	69.75	69.75	
310	35.00	45.25	58.75	66.25	64.75	69.50	71.00	74.25	74.25	
314	....	....	....	....	....	....	71.00	....	....	
316	29.75	38.00	48.25	54.25	52.00	57.25	60.50	64.50	64.50	
316L	....	....	53.25	61.25	60.00	62.25	65.50	69.50	69.50	
317	35.00	45.50	59.25	68.75	69.50	70.25	72.75	79.00	79.00	
321	33.50	30.25	36.00	41.50	41.75	42.75	48.50	51.25	51.25	
330	....	....	....	61.50	....	....	72.00	73.25	81.25	81.25
18-8Ch'Ta	29.25	38.25	46.00	53.25	53.00	53.75	58.50	66.50	66.50	
403	....	....	....	27.00	20.75	....	32.00	34.25	....	....
405	16.50	21.75	25.25	29.25	26.50	30.25	31.75	39.75	39.75	
410	14.00	18.25	24.00	27.25	26.25	28.75	30.00	34.25	34.25	
414	....	....	....	24.50	....	....	29.25	30.50	35.25	35.25
416	....	....	....	24.50	28.25	....	29.25	....	....	....
420	22.00	29.50	39.25	34.00	35.50	35.00	38.50	52.75	52.75	
430	14.25	18.50	24.50	28.25	27.00	29.25	30.50	34.75	34.75	
430F	....	....	25.00	28.75	....	29.75	....	....	....	
431	15.00	19.25	25.00	28.75	28.00	29.75	....	35.75	35.75	
446	....	....	33.50	38.25	50.25	39.50	40.75	59.75	59.75	

Stainless Steel Producers Are: Allegheny Ludlum Steel Corp.; Alloy Metal Wire Co. Inc.; American Steel & Wire Div., U. S. Steel Corp.; Armco Steel Corp.; Babcock & Wilcox Co.; Bethlehem Steel Co.; J. Bishop & Co.; G. O. Carlson Inc.; Carpenter Steel Co.; Charter Wire Products Co.; Cold Metal Products Co.; Crucible Steel Co. of America; Damascus Tube Co.; Wilbur B. Driver Co.; Driver-Harris Co.; Eastern Stainless Steel Corp.; Ellwood Ivins Steel Tube Works Inc.; Firth Sterling Inc.; Ft. Wayne Metals Inc.; Globe Steel Tubes Co.; Helical Tube Co.; Indiana Steel & Wire Co.; Ingersoll Steel Div., Borg-Warner Corp.; Jessop Steel Co.; Johnson Steel & Wire Co. Inc.; Joslyn Mfg. & Supply Co.; Kenmore Metals Corp.; Maryland Fine & Specialty Wire Co.; McLouth Steel Corp.; Metal Forming Corp.; McInnes Steel Co.; National-Standard Co.; National Tube Div., U. S. Steel Corp.; Newman-Crosby Steel Co.; Pacific Tube Co.; Page Steel & Wire Div., American Chain & Cable Co. Inc.; Pittsburgh Rolling Mills Inc.; Republic Steel Corp.; Rodney Metals Inc.; Rome Mfg. Co.; Rotary Electric Steel Co.; Sharon Steel Corp.; Sawhill Tubular Products Inc.; Simonds Saw & Steel Co.; Specialty Wire Co. Inc.; Spencer Wire Corp.; Stainless Welded Products Inc.; Standard Tube Co.; Superior Steel Corp.; Superior Tube Co.; Timken Roller Bearing Co.; Trent Tube Co.; Tube Methods Inc.; Ulbrich Stainless Steels; United States Steel Corp.; Universal-Cyclops Steel Co.; Wallingford Steel Co.; Washington Steel Corp.

Clad Steel

	Plates, Carbon Base 10%	Plates, Carbon Base 20%	Sheets, Carbon Base 20%
Stainless:			
302	....	....	28.00
304	28.30	33.60	29.75
304-L	30.30	35.50	....
310	41.30	47.00	....
316	33.40	38.80	42.75
316-L	37.80	43.30	....
316-CB	38.90	45.50	....
321	30.00	35.30	34.25
347	32.20	38.60	44.25
405	23.90	31.10	....
410	23.40	30.60	....
430	23.40	30.60	24.25
Inconel	47.90	63.90	....
Nickel	39.50	54.10	....
Monel	40.80	54.80	....
L-Nickel	41.70	58.50	....
Copper*	....	....	46.00

	Strip, Carbon Base: Cold-Rolled 10%	Cold-Rolled Both Sides	Hot-Rolled 10%	Hot-Rolled Both Sides
*Copper**	*29.60*	*37.15*	*25.75*	*33.55*

*Deoxidized. Production points: Stainless-clad sheets, New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7, New Castle, Ind. I-4 and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; copper-clad strip, Carnegie, Pa. S15.

Tool Steel

Grade	$ per lb	Grade	$ per lb
Regular Carbon	0.26	5% Cr Hot Work	0.405
Extra Carbon	0.31-.315	W-Cr Hot Work	0.425
Special Carbon	0.37	V-Cr Hot Work	0.445
Oil Hardening	0.405	Hi-Carbon-Cr	0.73

Grade by Analysis (%)

W	Cr	V	Co	Mo	$ per lb
20.25	4.25	1.6	12.25	...	4.030
18.25	4.25	1	4.75	...	2.245-2.415
18	4	2	9	...	2.615
18	4	2	....	...	1.705
18	4	1	....	...	1.540
14	4	2	5	...	2.195
13.75	3.75	2	5	...	2.165
13.5	4	3	....	...	1.905
9	3.5	..	....	...	1.115
6	4	2	....	5	1.045
6	4	3	....	5	1.200
1.5	4	1	....	8.5	0.900

Tool steel producers include: A4, A8, B2, B8, O4, O8, C12, C18, D4, F2, J3, L3, M14, M8, U4, V2 and V3.

Pig Iron

F.o.b. furnace prices in dollars per gross ton, as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal tax.

	Basic	No. 2 Foundry	Malleable	Bessemer
Birmingham District				
AlabamaCity,Ala. R2	52.38	52.88	....	....
Birmingham R2	52.38	52.88	....	....
Birmingham U6	....	52.88	56.50†	....
Gadsden,Ala. R2	52.38	52.88	....	....
Cincinnati, deld.	....	60.58	....	....
Buffalo District				
Buffalo H1, R2	56.00	56.50	57.00	57.50
Tonawanda,N.Y. W12	56.00	56.50	57.00	....
No.Tonawanda,N.Y. T9	....	56.50	57.00	57.50
Boston, deld.	66.65	67.15	67.65	....
Rochester,N.Y., deld.	59.02	59.52	60.02	....
Syracuse,N.Y., deld.	60.12	60.62	61.12	....
Chicago District				
Chicago I-3	56.00	56.50	56.50	57.00
Chicago R2	56.00	....	56.50	....
Gary,Ind. U5	56.00	....	56.50	....
IndianaHarbor,Ind. I-2	56.00	....	56.50	....
So.Chicago,Ill. W14, Y1	56.00	56.50	56.50	....
So.Chicago,Ill. U5	56.00	....	56.50	57.00
Milwaukee,deld.	58.17	58.67	58.67	59.17
Muskegon,Mich., deld.	....	62.80	62.80	....
Cleveland District				
Cleveland A7, R2	56.00	56.50	56.50	57.00
Akron,O., deld.	58.75	59.25	59.25	59.75
Lorain,O. N3	56.00	....	....	57.00
Mid-Atlantic District				
Bethlehem,Pa. B2	58.00	58.50	59.00	59.50
New York, deld.	....	62.28	62.78	....
Newark, deld.	61.02	61.52	62.02	62.52
Birdsboro,Pa. B10	58.00	58.50	....	....
Chester,Pa. C31	....	48.50	49.00	....
Philadelphia, deld.	....	50.16	50.66	....
Steelton,Pa. B2	58.00	58.50	59.00	59.50
Swedeland,Pa. A3	58.00	58.50	59.00	59.50
Philadelphia, deld.	59.66	60.16	60.66	61.16
Troy,N.Y. R2	58.00	58.50	59.00	59.50
Pittsburgh District				
NevilleIsland,Pa. P6	56.00	56.50	56.50	57.00
Pittsburgh (N&S sides), Aliquippa, deld.	....	57.87	57.87	58.37
McKeesRocks, deld.	....	57.54	57.54	58.04
Lawrenceville,Homestead, Wilmerding,Monaca, deld.	....	58.16	58.16	58.66
Verona,Trafford, deld.	58.19	58.69	58.69	59.19
Brackenridge, deld.	58.45	58.95	58.95	59.45
Bessemer,Pa. U5	56.00	....	56.50	57.00
Clairton,Rankin,So.Duquesne,Pa. U5	56.00	....	....	....
McKeesport,Pa. N3	56.00	....	....	57.00
Midland,Pa. C18	56.00	....	....	....

	Basic	No. 2 Foundry	Malleable	Bessemer
Youngstown District				
Hubbard,O. Y1	....	....	56.50	....
Sharpeville,Pa. S6	56.00	56.50	56.50	57.00
Youngstown Y1	....	....	56.50	57.00
Youngstown U5	56.00	....	....	57.00
Mansfield,O. deld.	60.90	....	61.40	61.90
Duluth I-3	56.50	56.50	56.50	57.00
Erie,Pa. I-3	56.00	56.50	56.50	57.00
Everett,Mass. E1	60.50	61.00	61.50	....
Fontana,Calif. K1	62.00	62.50	....	....
Geneva,Utah C11	56.00	56.50	....	....
GraniteCity,Ill. G4	57.90	58.40	58.90	....
Ironton,Utah C11	56.00	56.50	....	....
LoneStar,Texas L6	52.00	52.50*	52.50	....
Minnequa,Colo. C10	58.00	59.00	59.00	....
Rockwood,Tenn. T2	....	52.50*	56.50	....
Toledo,O. I-3	56.00	56.50	56.50	57.00
Cincinnati, deld.	61.76	62.26	....	....

*Low phos, southern grade. †Phos., 0.30 max.

PIG IRON DIFFERENTIALS

Silicon: Add 50 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos iron on which base is 1.75-2.00%.

Phosphorus: Deduct 38 cents per ton for P content of 0.70% and over.

Manganese: Add 50 cents per ton for each 0.50% manganese over 1% or portion thereof.

Nickel: Under 0.50% no extra; 0.50-0.74%, incl., add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.0-6.50% silicon; add $1.00 for each 0.5% Si; 75 cents for each 0.5% Mn over 1%)

Jackson,O. G2, J1	$65.00
Buffalo H1	66.25

ELECTRIC FURNACE SILVERY PIG IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1 for each 0.5% Mn over 1%; $2 per gross ton premium for 0.045% max P)

NiagaraFalls,N.Y. P15	$80.50
Keokuk,Iowa, Openhearth & Fdry, freight allowed K2	85.00
Keokuk, OH & Fdry, 12½ lb pigiets, 16% Si, frgt allowed K2	88.00

LOW PHOSPHORUS PIG IRON, Gross Ton

Cleveland, intermediate A7	$61.00
Lyles,Tenn. T3	70.00
Rockwood,Tenn. T3	70.00
Steelton,Pa. B2	64.00
Philadelphia, deld.	67.55
Troy,N.Y. R2	64.00

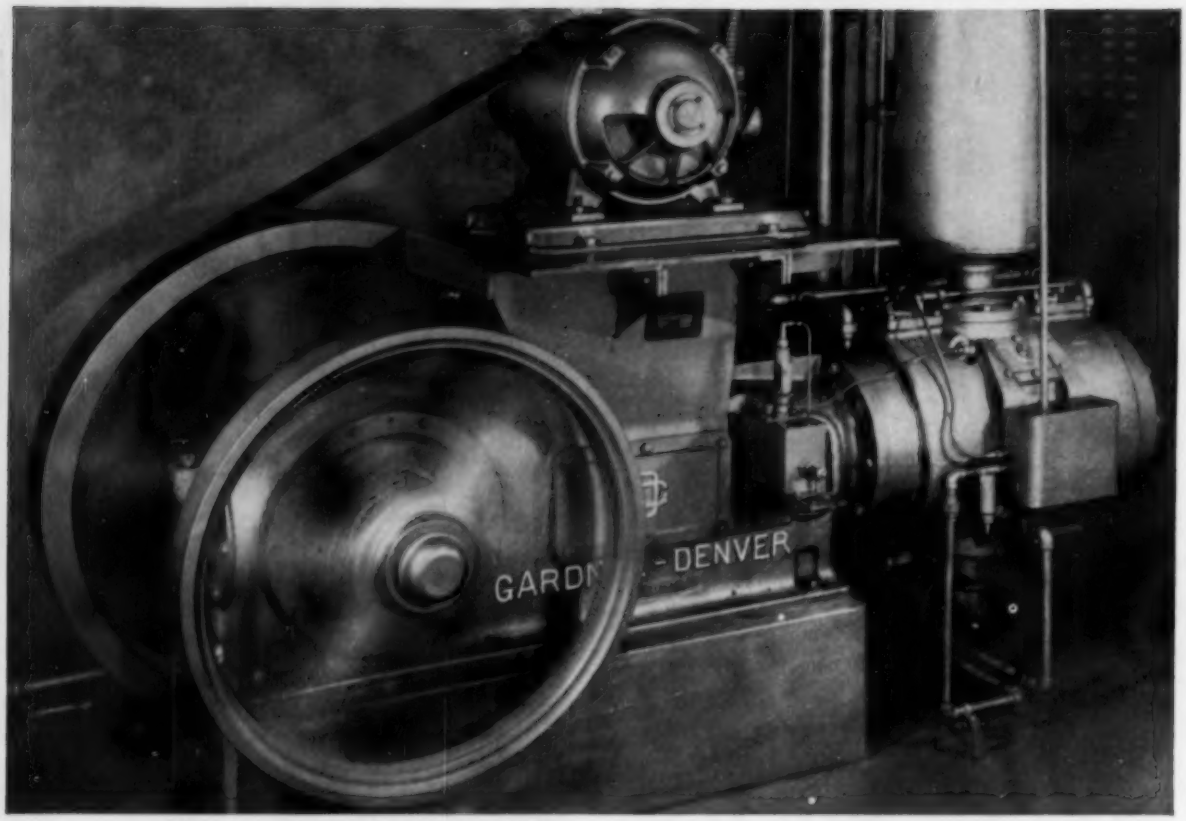
Warehouse Steel Products

Representative prices, cents per pound, subject to extras, f.o.b. warehouse. City delivery charges are 20 cents per 100 lb except Birmingham and St. Paul, 15 cents; Philadelphia, New York, Boston and Los Angeles, 10 cents; Buffalo, 25 cents on C.R. and galvanized sheets, C.F. and alloy bars and 20 cents on other commodities; Houston, Seattle, Spokane, Wash., no charge.

	SHEETS				STRIP		BARS			Standard Structural Shapes	PLATES	
	Hot Rolled	Cold Rolled	Gal. 10 Ga.†	Stainless Type 302‡§	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.¶	H.R. Alloy 4140††		Carbon	Floor
Baltimore	6.02	7.51	7.79	....	6.69	...	6.68	8.52#	12.54	6.72	6.37	7.76
Birmingham	6.35	7.35	8.25#	....	6.60	...	6.50	9.10	....	6.65	6.65	8.45
Boston	7.23	8.23	9.53	45.39#	7.47	...	7.20	8.60	12.30	7.49	7.37	8.50
Buffalo	6.35	7.40	8.79	....	6.70	...	6.50	7.95	12.00	6.72	6.65	7.90
Charlotte, N. C.	6.95	7.80	8.60	....	6.90	...	7.10	8.37	....	7.10	7.10	8.37
Chicago	6.35	7.35	8.20	46.05	6.62	...	6.51	7.50	11.75	6.69	6.52	7.64
Cincinnati	6.49	7.37	8.20	46.10	6.68	...	6.75	7.80	12.00	6.86	6.81	7.89
Cleveland	6.36	7.36	8.25	46.16	6.72	...	6.57	7.60	11.81	7.02	6.69	7.81
Detroit	6.57	7.57	8.58	43.50	6.90	7.36	6.79	7.79	11.95	7.16	6.80	7.83
Erie, Pa.	6.35	7.35	8.30	....	6.70	...	6.50	7.45#	....	6.69	6.52	7.64
Houston	7.35	7.80	9.93	....	7.70	9.30	7.70	9.50	....	7.60	7.35	8.75
Los Angeles	7.50	9.35	9.95	50.15	7.85	11.75	7.45	10.15	13.15	7.65	7.45	9.55
Milwaukee	6.47	7.47	8.39	....	6.71	...	6.60	7.69	11.84	6.86	6.61	7.73
Moline, Ill.	6.73	7.73	8.65	....	6.97	...	6.86	7.85	....	7.04	6.87	...
New York	6.97	7.91	8.79	44.95	7.56	...	7.37	8.73#	12.13	7.38	7.27	8.68
Norfolk, Va.	7.00	...	...	....	7.10	...	7.10	8.60	....	7.10	7.10	7.95
Philadelphia	6.19	7.44	8.38	41.99#	6.96	8.50	6.74	8.36#	11.96	6.54	6.49	7.51**
Pittsburgh	6.35	7.35	8.20	46.00	6.72	...	6.51	7.85	11.75	6.69	6.52	7.64
Portland, Oreg.	7.20	8.25	8.90	48.50	7.45	...	7.30	10.45	14.00	7.25	7.05	8.95
Richmond, Va.	6.43	7.39	8.67	....	6.77	...	6.71	8.33	....	7.08	6.65	8.08
St. Louis	6.67	7.67	8.89	48.89	6.91	...	6.80	7.89	12.04	7.09	6.81	7.93
St. Paul	7.04	8.04	8.96	....	7.28	...	7.17	8.26	....	7.35	7.18	8.30
San Francisco	7.55	8.95	8.70	51.65	7.80	...	7.35	10.05	13.05	7.50	7.40	9.45
Seattle	8.10	9.80	10.15	51.00	8.20	...	7.80	10.95	13.50	7.75	7.80	9.60
Spokane	8.35	9.65†	10.05	....	7.80	...	7.80	10.85§§	14.25	7.45	7.55	9.60
Washington	6.70	7.99	7.97	....	7.27	...	7.38	9.09	....	7.31	7.05	8.16

*Prices do not include gage extras; †prices include gage and coating extras, based on 11-cent zinc except in New York, Philadelphia, Los Angeles, Cincinnati, Cleveland, Pittsburgh, San Francisco (11.50-cent zinc) and in Birmingham (coating extra excluded); ‡includes 35-cent special bar quality extra; §as rolled; **⅛-in. and heavier; ††as annealed; ‡‡prices include $2 for crating; §§under ¼-in.

Base quantities, 2000 to 4999 lb except as noted: Cold-rolled strip and cold-finished bars, 2000 lb and over, except in Seattle, 2000 to 9999 lb; stainless sheets, 8000 lb except in New York and Boston, 10,000 lb, and in San Francisco, 2000 to 4999 lb; hot-rolled products on West Coast, 2000 to 9999 lb; #—500 to 9999 lb; ¶—4000 lb and over; §—1000 to 1999 lb; ‖—1000 lb and over; †—1500 to 3999 lb; ‡—f.o.b. local delivery in lots of 10,000 lb and over.



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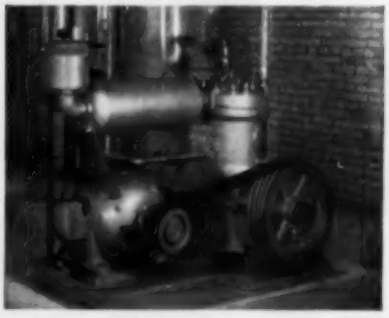

* Expert help in choosing the right size and type air compressor for your plant.
* Pointers on compressor care and maintenance to help you obtain the full efficiency of Gardner-Denver quality.
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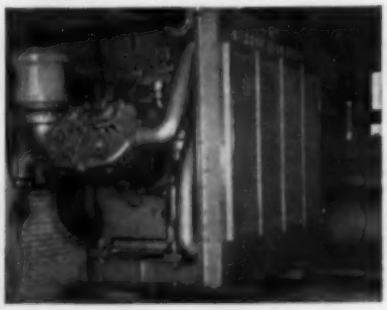

GARDNER-DENVER

THE QUALITY LEADER IN COMPRESSORS, PUMPS AND ROCK DRILLS FOR CONSTRUCTION, MINING, PETROLEUM AND GENERAL INDUSTRY

Gardner-Denver Company, Quincy, Illinois
In Canada: Gardner-Denver Company (Canada), Ltd.,
14 Curity Avenue, Toronto 16, Ontario

Ingram-Richardson Mfg. Co.

Worker inspects porcelain enameled aluminum extrusion as...

New Material Enters Construction

MAKE WAY in the crowded construction field for a newcomer! Aluminum panels coated with porcelain enamel are ready to carve out a place in that busy industry.

The goal of aluminum producers is an annual market of 200 million lb for porcelain enamel on aluminum applications by 1970. That's not all to be in construction. The product has passed its experimental stage and is used in home appliances and transportation industries. Researchers at Aluminum Co. of America, Pittsburgh, say all three fields are potentially strong.

Variety of Applications—The Navy uses porcelain enameled aluminum in nonstructural bulkheads, where light weight is important. In fact, you can use it wherever you want durability, ease of handling, maintenance and fabrication of the panel without flaking off the porcelain coating. Two possible uses—in outdoor furniture and office equipment. A major advantage in construction is that panels can be cut to size on the job.

The market for porcelain enameled aluminum in architecture appears tremendous, claim spokesmen for Reynolds Metals Co., Louisville. The panel's permanent bright color in store fronts attracts attention of shoppers. In commercial buildings it can attract the prospective renter. Many buildings use the panels for signs. A porcelain aluminum office building is completed in Los Angeles and another planned in Charleston, W. Va.

Manufacturing Techniques—Fabricators can apply vitreous enamel to metal quickly by ordinary enameling and firing methods. A single coating is often all that's required. Firms such as Ingram-Richardson Mfg. Co., Beaver Falls, Pa., can coat both aluminum and steel panels.

You can expect to see a growing number of firms entering production of the porcelain-on-aluminum panels. Seaporcel Metals Inc., Long Island City, N. Y., producer of architectural porcelain enamel, is entering manufacture of porcelain enamel on aluminum. M. Jesse Salton, Seaporcel president, says the new aluminum process means a weight reduction of "as much as two-thirds compared with ceramic-coated steel."

Preliminary Spadework—In developing this product, Seaporcel worked with E. I. du Pont de Nemours & Co., Wilmington, Del., maker of the derivative ceramic material and Alcoa, its supplier of aluminum. Seaporcel now has a Navy order calling for use of 80,000 square feet of the material on joiner bulkheads, pilasters and partitions on the new supercarrier *USS Saratoga*. Panels will be in shades of white, gray, green and yellow. The company also has an order to clad exterior panels of the South Side hospital at Bay Shore, Long Island, N. Y.

Despite the growing trend to metal building exteriors, porcelain enamel on aluminum faces a tough competitive struggle. The cost may be too high for some applications.

Watching Costs—Working to cut the expense of this product, producers say they may succeed in lowering the cost of frit, eliminating some complex operations in preparation of aluminum sheet or in cutting time the sheet remains in the furnace.

"There are problems regarding application of porcelain enamel to aluminum yet to be solved and a great amount of data yet to be obtained," reports R. F. Hafer, finishing engineer, application engineering department, Reynolds. "But you can be certain that the day is not too far off when a large proportion of architects will specify porcelain enameled aluminum panels in building construction."

Stainless Steel . . .

Stainless Steel Prices, Page 134

The new mill base-price card on stainless steel products issued by U. S. Steel Corp. Feb. 11 includes a new listing for cold-rolled stainless strip produced at Gary, Ind. It covers thicknesses from 0.014 to 0.1875 in.; widths from 4 to 24 in. in coils; widths from 8 to 24 in. in cut lengths.

The items are not new products at Gary, but increasing demand suggested wider publicity on their availability at that point. Gary prices command a premium of 0.25c over the base quotations at other points.

Tubular Products Division, Babcock & Wilcox Co., Beaver Falls, Pa., revised prices Feb. 10 on various grades of seamless stainless tubing.

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FLAT-STRAPPED BUNDLES OF SKELP to ROUND-STRAPPED CARTONS OF REFRIGERATOR PARTS

- USS GERRARD Strapping, Round and Flat, is ideal for palletizing, unitizing, crating.
- USS GERRARD Round Strapping costs about *40% less* than any other form of metal reinforcement.
- USS GERRARD hand-operated and semi-automatic machines tie quickly, efficiently.
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- Steel-strapped bundles require only one inventory. No loose pieces. Pilferage eliminated.
- Single-source buying of both Round and Flat Steel Strapping reduces freight charges and paper work.

Bring your packaging and tying problems to USS GERRARD. Our engineers are here to help you solve them—at no cost to you.

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General Offices: Chicago, Illinois

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Please send me, free of charge, the new 36-page GERRARD Blue Book of Packaging.

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Company.....
Address.....
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State.....

USS GERRARD STEEL STRAPPING
Round and Flat

UNITED STATES STEEL

Changes, including elimination of the discount that applied to tubing being finished for further conversion, reflect increased labor and raw material costs.

Other price adjustments were made at the same time, both upward and downward, on seamless alloy and carbon steel tubing.

Wire . . .

Wire Prices, Pages 123 & 133

Wire mill bookings are somewhat better, but volume still falls below the expectations of producers. Merchant product demand is rising seasonally and is offsetting the lag in manufacturers' wire trade in some areas.

In New England, bookings for March are reported slightly heavier than in recent months, but there are still openings in schedules for that month on most carbon grades of wire.

Consumers shy away from forward buying and give slight consideration to the normal lead time of 30-45 days. They usually seek prompt shipment. The wire mills are operating at a higher rate than they were last month, but backlogs still are not too robust in most instances.

John A. Roebling's Sons Co., Trenton, N. J., subsidiary of the Colorado Fuel & Iron Corp., has booked a $2,198,169 contract from New York for furnishing labor and materials required in replacing cable bands and suspenders on the Manhattan bridge over the East river.

Sheets, Strip . . .

Sheet & Strip Prices, Pages 121 & 122

With automobile assembly holding a blistering pace, there is no letup in demand for flat-rolled steel. Mill order books are loaded into late May on cold-rolled in most cases. In fact, Chicago area makers are sold out for the period.

Expectations are, third quarter volume will be relatively light. A drop in auto requirements will likely leave holes in rolling schedules.

Currently, appliance manufacturers, among others, are hard pressed for enough cold-rolled sheets to meet the current month's schedules. Hot-rolled, however, is under less pressure, being available for late April delivery at some points. Still, indicative of tightening supply, one Midwest mill, which a week ago quoted three to four weeks on hot-rolled under 40 in. wide, now specifies six to seven weeks. Shipments of sheets over 40 in. ranges up to ten weeks.

Flat-rolled specialties are under

rising pressure. The swing from cut lengths to coils is placing considerable pressure on producers of cold-reduced electrical sheets, especially those fully processed. Makers of another specialty, enameling stock, are booked up well into second quarter, in some instances for the entire period. The same situation is true of galvanized sheets.

Superior Steel Corp. last week raised prices on clad steel, effective Feb. 11.

Structural Shapes . . .

Structural Shape Prices, Page 120

A good year for structural shapes appears to be in the making. Chief support will come from construction and road building. It is figured road programs in current planning will take about 475 tons of steel per million dollars spent and a good part will be structurals.

Some eastern fabricators report estimating departments are finding it difficult to keep pace with demand.

Increase in contracts for fabricated structurals in New England includes 7000 tons for multipurpose hangars. Bulk will be fabricated by an Allentown, Pa. shop. Bridges for the Massachusetts turnpike also bolster current bookings.

In general, structural inquiry is increasing and is more diversified. In addition to highway bridgework there is a good sprinkling of industrial and commercial jobs. Schoolwork also figures prominently in the market picture. As backlogs expand, fabricators are likely to become more selective in their bidding.

General Services, Seattle, will receive bids Feb. 28 for 4316 tons of sheet piling and 84 tons of H-piling required for a proposed marine terminal at Seward, Alaska.

Steel Bars . . .

Bar Prices, Page 120

Deliveries are slightly more extended on bars—carbon, alloy and cold-drawn—but producers still can give relatively prompt shipment on most sizes. Supply conditions vary among the districts, being slightly tighter in the East but relatively easy in the Midwest.

Consumers find some first rollings are filled, and they are being forced to await other rolling cycles. In some cases, as a result, deliveries extend up to six weeks, averaging about four. Hot-rolled alloy bar shipments also range about four.

The range of sizes available is narrowing in New England. Where rolling is necessary, cold-drawn de-

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⅛ to 2 tons

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liveries extend around four weeks. Cold-drawn mills at Pittsburgh are building modest order backlogs. The same is true of hot-rolled bars there. Chicago area capacity, however, is still far from taxed.

Buyers are covering needs ahead to greater extent than formerly. To a degree this is due to the Formosan situation.

Republic Steel Corp., Cleveland, issued revised extras on cold-finished carbon and cold-finished alloy bars, effective Feb. 12. The new cards incorporate numerous changes, largely applying to quantities.

Plates . . .

Plate Prices, Page 120

Inquiry for plates is quickening. Seasonal revival in requirements for line pipe and construction, as well as increasing export demand, is reflected in some slight lengthening of deliveries, which, in the East, now average close to three weeks.

At Chicago, demand is tightening progressively. Requirements are increasing on a broad base, with deliveries more extended. Sheared plate deliveries range up to six weeks, universal mill plates, five.

Sellers on the Pacific Coast have closed books for March. Most report first quarter volume is about 5 per cent better than the fourth quarter's last year.

Spring activity in line pipe construction is reflected in rising demand for plates at Pittsburgh. Construction firms are beginning to show interest in inventories. Also, the tense international situation may be a stimulating influence. In any case, John E. Timberlake, vice president-sales, Jones & Laughlin Steel Corp. warns users that while heavy and wide sheared plate capacity is more than adequate for peacetime demands, a naval program or emergency scheduling of atomic energy facilities and heavy generating plants could completely change the picture.

Tubular Goods . . .

Tubular Goods Prices, Page 114

Orders for large diameter electric-weld pipe are increasing seasonally. U. S. Steel Corp.'s National Tube Division will ship about 200 miles of 30-in. pipe beginning Mar. 1 for use in the East in gas transmission.

Builders of pipelines trimmed activity last fall and demand subsided in mid-winter. The electric-weld pipe mill of National Tube's McKeesport, Pa., works resumed operations Feb. 14. It had been down since mid-November.

Judge for yourself the advantages of

VANCORAM FERROVANADIUM

packed in bags

Look for the blue product marking which is the identifying color for Vanadium in Vancoram's original color coding system.

Each of these bags contains 25 lbs. of vanadium for handy cost-saving additions to furnace, cupola or ladle.

SAVES TIME AND MONEY—You don't have to weigh prior to alloy addition. Each bag contains exactly 25 lbs. of vanadium. Thus you save on handling costs.

CONTAMINATION AND WASTE ELIMINATED—The ferrovanadium is confined to its own bag . . . made of strong, white, cotton fabric with a crepe-paper interlining that's adhered to the outer covering with a special moisture-resisting adhesive. Bags eliminate waste common to other types of packing.

INVENTORY AND HANDLING PROBLEMS SIMPLIFIED—Standard weight of each bag means quicker inventory. Palletized shipments can be handled quickly and easily by fork truck or crane. Each bag is clearly labeled for ready identification.

UNIFORMLY HIGH-GRADE MATERIAL—Vancoram ferrovanadium is produced under strictest quality control and thus is guaranteed to be physically clean and of uniform high quality.

Bagged ferrovanadium is another example of the way VCA works to help steelmakers make better metals faster—and at lower cost. Contact your VANADIUM CORPORATION representative for further information on Vancoram ferro alloys.

VANADIUM CORPORATION OF AMERICA

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Producers of alloys, metals and chemicals

Ores

Lake Superior Iron Ore

(Prices effective July 1, 1953, and thereafter; gross ton, 51.50% iron natural, rail of vessel, lower lake ports.)

Old range bessemer	$10.30
Old range nonbessemer	10.15
Mesabi bessemer	10.05
Mesabi nonbessemer	9.90
Open-hearth lump	11.15
High phosphorus	9.90

The foregoing prices are based on upper lake rail freight rates, lake vessel freight rates, handling and unloading charges, and taxes thereon which were in effect on June 24, 1953, and increases or decreases after such date are for buyer's account.

Eastern Local Iron Ore

Cents per unit deld. E. Pa.

Foundry and basic 52-62% concentrates contract	17.00-18.00

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 60 to 66%	20.00
N. African hematite (spot)	nom. 20.00-22.00
Brazilian iron ore, 68-69% (spot)	25.00

Tungsten Ore

Net ton unit, before duty

Foreign, Wolframite, good commercial quality	$35.00-$36.00
Domestic scheelite, mine	63.00

Manganese Ore

Mn 48%, nearby, 90c-92c per long ton unit c.i.f. U. S. ports, duty for buyer's account: 46-47%, 80c.

Chrome Ore

Gross ton, f.o.b. cars New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., or Tacoma, Wash.

Indian and African

48% 2.8:1	nom. $40.00-$42.00
48% 3:1	42.00-44.00
45% no ratio	32.00-34.00

South African Transvaal

44% no ratio	$19.00-$20.00
42% no ratio	31.00-32.00

Domestic

(Rail nearest seller)

18% 3:1	$39.00

Molybdenum

Sulphide concentrate, per lb. Mo content mines unpacked	$1.00

Antimony Ore

Per unit of Sb content, c.i.f. seaboard

50-60%	$3.35-$3.85
60-65%	4.00-4.35

Vanadium Ore

Cents per lb V_2O_5 content, deld. mills Domestic	$1.00

Refractories

Fire Clay Brick (per 1000)

High-Heat Duty: Pueblo, Colo., $94; Ashland, Grahn, Hayward, Hitchins, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwensville, Lock Haven, Lumber, Orviston, West Decatur, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parral, Portsmouth, O., Ottawa, Ill., Stevens Pottery, Ga., $114; Salina, Pa., $119; Niles, O., $125; Los Angeles, Pittsburg, Calif., $137.20.

Silica Brick (per 1000)

Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Portsmouth, O., $130; Warren, Niles, O., Hays, Pa., $125; Morrisville, Pa., $123.50; E. Chicago, Ind., Joliet, Rockdale, Ill., $130; Cutler, Utah, $121.55; Los Angeles, $127.85.

Super Duty: Hays, Sproul, Pa., Warren, Windham, O., Athens, Tex., $137; Morrisville, Pa., Niles, O., $140; Joliet, Ill., $143.

Semisilica Brick (per 1000)

Clearfield, Pa., $130; Woodbridge, N. J., $114.

Insulating Fire Brick (per 1000)

2300° *F:* Massillon, O., $178.50; Clearfield, Pa., $213; Augusta, Ga., Beaver Falls, Zelienople, Pa., Mexico, Mo., $206; Vandalia, Mo., $214.10; Portsmouth, O., $207.50; Bessemer, Ala., $212.80.

Ladle Brick (per 1000)

Dry Pressed: Bessemer, Ala., $64.60; Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Pa., Mexico, Mo., $77.50; Wellsville, O., $81.50; Clearfield, Pa., Portsmouth, O., $87; Peria, Ark., $109; Los Angeles $110.25; Pittsburg, Calif., $111.30.

High-Alumina Brick (per 1000)

50 Per Cent: Clearfield, Pa., St. Louis, Mexico, Mo., $181; Danville, Ill., $169.30.

60 Per Cent: St. Louis, Mexico, Vandalia, Mo., Clearfield, Pa., $235; Danville, Ill., $213.20.

70 Per Cent: St. Louis, Mexico, Vandalia, Mo., $280; Danville, Ill., $258; Clearfield, Pa., $287.

Sleeves (per 1000)

Rossdale, Johnstown, Bridgeburg, Pa., $147; Clearfield, Pa., $148.50; St. Louis, $159.30; Athens, Tex., $185.

Nozzles (per 1000)

Rossdale, Pa., $234.70; Johnstown, Pa., $240.70; Clearfield, Pa., $241.40; St. Louis, $259.45; Athens, Tex., $247.70; Bridgeburg, Pa., $267.50.

Runners (per 1000)

Rossdale, Johnstown, Bridgeburg, Pa., $183.50; Clearfield, Pa., $185.50; St. Louis, $195.80; Athens, Tex., $191.90.

Dolomite (per net ton)

Domestic dead-burned bulk; Billmeyer, Blue Bell, Williams, Plymouth Meeting, York, Pa., Millville, W. Va., Bettsville, Millersville, Martin, Narlo, Gibsonburg, Woodville, O., $14.50; Thornton, McCook, Ill., $15.10; Dolly Siding, Bonne Terre, Mo., $12.65.

Magnesite (per net ton)

Domestic, dead-burned bulk, ¼-in. grains with fines: Luning, Nev., Chewelah, Wash., $38.

Metallurgical Coke

Price per net ton

Beehive Ovens

Connellsville, furnace	$13.50-$14.00
Connellsville, foundry	16.50-17.00

Oven Foundry Coke

Kearney, N. J., Ovens	$24.00
Everett, Mass., ovens New England, deld.	*26.05
Chicago, ovens	24.50
Chicago, deld.	26.00
Terre Haute, ovens	24.05
Milwaukee, ovens	25.25
Indianapolis, ovens	24.25
Cincinnati, deld.	25.85
Painesville, O., ovens	25.50
Cleveland, deld.	27.43
Erie, Pa., ovens	25.00
Birmingham, ovens	22.65
Cincinnati, deld.	27.58
Buffalo, ovens	25.00
Buffalo, deld.	26.25
Lone Star, Tex., ovens	18.50
Philadelphia, ovens	23.00
Swedeland, Pa. ovens	23.00
St. Louis, ovens	
St. Louis, deld.	26.00
St. Paul, ovens	23.75
Portsmouth, O., ovens	24.00
Cincinnati, O., deld.	26.62
Detroit, ovens	25.50
Detroit, deld.	26.50
Pontiac, deld.	27.06
Saginaw deld.	28.58

*Or within $4.55 freight zone from works.

Coal Chemicals

Spot, cents per gallon, ovens

Pure benzol	36.00
Toluol, one deg	32.00-35.00
Industrial xylol	32.00-35.00

Per ton, bulk, ovens

Sulphate of ammonia	$42-$45
Birmingham area	42.00†

†With port equalization against imports.

Cents per pound, producing point

Phenol 40 deg. (U.S.P.), tank cars	18.00
c.l. drums	19.00
l.c.l. drums	19.50

Fluorspar

Metallurgical grades, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF_2 content 72.5%, $35-$36; 70%, $32-$33; 60%, $28-$29. Imported, net tons, duty paid, metallurgical grade: European, $28-$30; Mexican, $25.50.

Electrodes

(Threaded with nipple, unboxed f.o.b. plant)

GRAPHITE

Diam. (Inches)	Length	Per 100 lb
2	24	$47.75
2½	30	30.75
3	40	30.00
4	40	28.50
5¼	40	28.25
6	60	25.50
7	60	25.25
8, 9, 10	60	22.75
12	72	26.00
14	60	22.50
16	72	21.50
17	60	22.00
18	72	21.50
20	72	21.25

CARBON

40	100	$9.50
40, 35	110	9.50
30	84	9.75
24	98	9.60
24	72, 84	9.85
20	90	9.65
20	84	9.85
17	72	9.85
17	60	10.25
14	72	10.25
14, 12, 10	60	11.10
8	60	11.40

Tubular Products Division, Babcock & Wilcox Co., Beaver Falls, Pa., effective Feb. 15, revised prices on various grades of seamless stainless tubing. Adjustments on seamless alloy and carbon steel tubing, both upward and downward, also were announced. The price adjustments reflect increased labor and raw materials costs.

Rising order volume for steel pipe resulted in stepped-up operations at the Benwood Works, Wheeling Steel Corp., as of Feb. 14. Two continuous weld furnaces and the skelp mill, which had been operating three days a week, have been placed on a 5-day production schedule.

Warehouse . . .

Warehouse Prices, Page 135

Buying continues close to actual requirements in all warehouse steel products. Some distributors offer 24-hour service in every product except cold-finished sheet (which can be delivered in two days) and other products requiring additional fabrication.

The Formosan situation has stimulated sales on the West Coast where consumers are accumulating reserve stocks. Inquiries from January to date are about 10 per cent larger than usual.

Jones & Laughlin Steel Corp., Pittsburgh, has purchased the steel and aluminum warehouse business of Hamilton Steel Co., Cleveland, effective Mar. 1. J&L will continue the business under the Hamilton name.

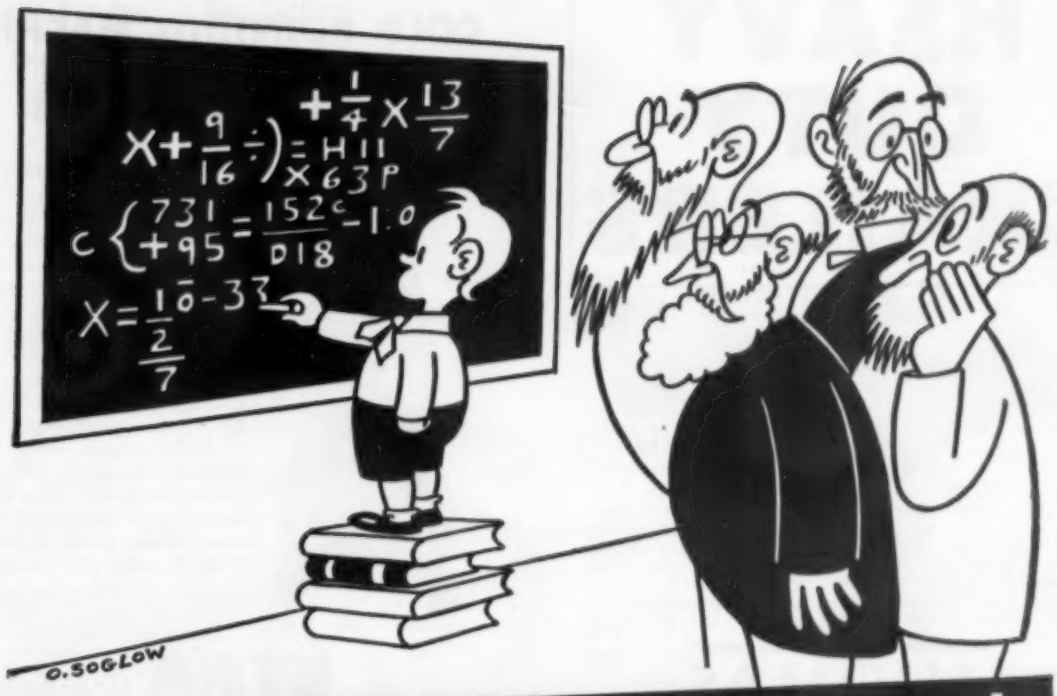
Hamilton Steel Co. is a subsidiary of Federated Steel Corp., Pittsburgh. The latter firm will continue in the steel and aluminum warehouse business through its Pittsburgh Division, Fort Duquesne Steel Co., and its subsidiaries, Morrison-Drabner Steel Co., Cincinnati, and Federated Steel Co. of Georgia, Atlanta.

Metallurgical Coke . . .

Metallurgical Coke Prices, Page 132

Orders for foundry coke at mid-February in the Chicago district top the number that were on books on Jan. 15. Shipments have increased steadily since last August and indications are March will continue the trend. Automotive foundries are busiest. Shops serving the farm implement industry are showing more activity. Operations of jobbing shops are spotty.

R. N. Marshall, president, Pittsburgh Coke & Chemical Co., reports increased sales which started in the final quarter of last year continue. Coke demand gained in January and prospects are for further increases.



You'll be surprised at these figures!

Thanks to the thrift of employed Americans and the cooperation of 45,000 companies which have enrolled more than 8,000,000 men and women in the Payroll Savings Plan—

- Sales of E and H Bonds (H Bond is the current-income companion piece of the E Bond, sold only to individuals and purchased in larger denominations by executives) in 1954 totaled $4.9 billion, a new peacetime record.

- Sales in 1954 exceeded *all redemptions* in that year of matured E Bonds and unmatured E and H Bonds by more than $400 million—the highest net amount since 1949.

- Cash value of E and H Bonds outstanding reached a new record high of $38.2 billion, a gain of $1.5 billion in 1954.

- This $38.2 billion cash holding by individuals represents 14% of the national debt. Never before has the national debt of our country been so widely held.

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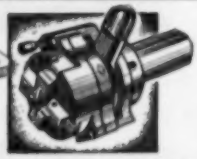

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Current Ferroalloy Quotations

MANGANESE ALLOYS

Spiegeleisen: (19-21% Mn, 1-3% Si), Cariot per gross ton $86, Palmerton, Pa.; $87 Clairton and Duquesne, Pa.
(16 to 19% Mn) $84 per ton, Palmerton, Pa.; $85 per ton, Clairton and Duquesne, Pa.

Standard Ferromanganese: (Mn 74-76%, C 7% approx.). Base price per net ton $190, Clairton, Duquesne, Johnstown and Sheridan, Pa.; Alloy, W. Va.; Ashtabula, Marietta, Philo, O.; Sheffield, Ala.; Portland, Oreg., and Tacoma, Wash. Add or subtract $2.00 for each 1% or fraction thereof of contained manganese over 76% or under 74%, respectively.

(Mn 79-81%) Lump $198 per net ton, f.o.b. Anaconda or Great Falls, Mont. Add $2.60 for each 1% above 81%; subtract $2.60 for each 1% below 76%, fractions in proportion to nearest 0.1%.

Low-Carbon Ferromanganese, Regular Grade: (Mn 85-90%). Carload, lump, bulk, max, 0.07% C, 29.95c per lb of contained Mn, carload packed 30.7c, ton lots 31.8c, less ton 33c. Delivered. Deduct 1.5c for max 0.15% C grade from above prices, 3c for max, 0.30% C, 3.5c for max 0.50% C, and 6.5c for max 75% C—max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P 0.06% max). Add 2.05c to the above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.5% max). Carload, lump, bulk 21.35c per lb of contained Mn, carload packed 22.1c, ton lot 23.2c, less ton 24.4c. Delivered. Spot, add 0.25c.

Manganese Metal: 2" x D (Mn 95.5% min, Fe 2% max, Si 1% max, C 0.2% max): Carload, lump, bulk, 43c per lb of metal; packed, 45.75c; ton lot 47.25c; less ton lots 49.25c. Delivered. Spot, add 3c.

Electrolytic Manganese Metal: Min carloads, 30c; 2000 lb to min carloads, 32c; 250 lb to 1999 lb 34c. Premium for hydrogen-removed metal, 0.75c per lb. Prices are f.o.b. cars, Knoxville, Tenn., freight allowed to St. Louis or to any point east of Mississippi; or f.o.b. Marietta, O., freight allowed.

Silicomanganese: (Mn 65-85%). Contract, lump, bulk 1.50% C grade, 18-20% Si, 11.00c per lb of alloy, carload packed 11.75c, ton lots 12.65c, less ton 13.65c. Freight allowed. For 2% C grade, Si 15-17%, deduct 0.2c from above prices. For 3% C grade, Si 12-14.5%, deduct 0.4c from above prices. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max, Si 4% max, C 0.10% max). Contract, ton lots 2" x D, $1.50 per lb of contained Ti; less ton $1.56. (Ti 35-43%, Al 8% max, Si 4% max, C 0.10% max). Ton lots $1.35, less ton $1.37, f.ob. Niagara Falls, N. Y., freight allowed to St. Louis. Spot, add 5c.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract $177 per ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi river and north of Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4.5%). Contract $195 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l., lump, bulk 24.75c per lb of contained Cr; c.l. packed 25.65c, ton lot 26.80c, less ton 28.20c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: (Cr 67-72%). Contract, carload lump, bulk, C 0.025% max. (Simplex 34.50c per lb contained Cr, 0.03% C 36.50c, 0.04% C 35.50c, 0.06% C 34.50c, 0.10% C 34.00c, 0.15% C 33.75c, 0.20% C 33.50c, 0.50% C 33.25c, 1% C 33.00c, 1.50% C 32.85c, 2% C 32.75c. Carload packed add 1.1c, ton lot add 2.2c, less ton add 3.9c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, High-Carbon: (Cr 62-66%, C 5-7%). Contract, c.l. 5 M x D, bulk, 26.25c per lb contained Cr. Packed, c.l. 27.15c, ton 28.50c, less ton 30.25c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, Low-Carbon: (Cr 50-54%, Si 28-32%, C 1.25% max). Contract, carload, packed, 8 M x D, 18.35c per lb of alloy; ton lot 19.2c; less ton lot, 20.4c, delivered; spot, add 0.25c.

Low-Carbon Ferrochrome Silicon: (Cr 34-41%, Si 42-49%, C 0.05% max). Contract carload, lump, 4" x down and 2" x down, bulk, 24.75c per lb of contained chromium plus 12c per pound of contained silicon; 1" x down, bulk 24.90c per pound of contained chromium plus 12.2c per pound of contained silicon. F.o.b. plant; freight allowed to destination.

Chromium Metal: (Min 97% Cr and 1% Fe). Contract, 1" x D; packed, max 0.50%, carload $1.16, ton lots $1.18; less ton $1.20. Delivered. Spot, add 5c. Prices on 0.10 per cent carbon grade, add 9c to above prices.

VANADIUM ALLOYS

Ferrovanadium: Open-hearth. Grade (V 35-55%, Si 8-12% max, C 3-3.5% max). Contract, any quantity, $3.00 per lb of contained V. Delivered. Spot, add 10c. **Crucible-Special Grades** (V 50-55%, Si 2-3.5% max, C 0.5-1% max). $3.10. **Primos and High Speed Grades** (V 50-55%, Si 1.50% max C 0.20% max) $3.20.

Grainal: Vanadium Grainal No. 1, $1 per lb; No. 6, 68c; No. 79, 50c, freight allowed.

Vanadium Oxide: Contract, less carload lots $1.28 per lb contained V_2O_5, freight allowed. Spot, add 5c.

SILICON ALLOYS

35-30% Ferrosilicon: Contract, carload, lump, bulk, 20.0c per lb of contained Si, packed 21.40c; ton lot 22.50c f.o.b. Niagara Falls, freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump, bulk, 12c per lb of contained Si, carload packed 13.6c, ton lot 15.05c, less ton 16.7c. Delivered. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max). Add 1.7c to 50% ferrosilicon prices.

65% Ferrosilicon: Contract, carload, lump, bulk, 13.5c per pound contained silicon; carload packed 14.85c; ton lots, 16.05c; less ton, 17.4c, delivered. Spot, add 0.35c.

75% Ferrosilicon: Contract, carload, lump, bulk, 14.4c per lb of contained Si, carload packed 15.7c, ton lot 16.85c, less ton 18.1c. Delivered. Spot, add 0.3c.

90% Ferrosilicon: Contract, carload, lump, bulk, 17.25c per lb of contained Si, carload packed 18.45c, ton lot 19.4c, less ton 20.45c. Delivered. Spot, add 0.25c.

Silicon Metal: (Mn 97% Si and 1% max Fe). C.l. lump, bulk, regular 18.5c per lb of Si, c.l. packed 19.7c, ton lot 20.6c, less ton 21.6c. Add 0.5c for max, 0.10% calcium grade. Deduct 0.5c for max 2% Fe grade analyzing min 96% Si. Spot, add 0.25c.

Alsifer: (Approx. 20% Al, 40% Si, 40% Fe). Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 9.25c per lb of alloy, ton lots packed 10.15c, 200 to 1999 lb 10.50c, smaller lots 11c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 30-42%, Fe 40-45%, C 0.20% max). Contract, c.l. lump, bulk 8.0c per lb of alloy, c.l. packed 8.75c, ton lot 9.5c, less ton 10.35c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max). Contract, carload, lump, packed 25.25c per lb of alloy, ton lot 26c, less ton 27.25c. Freight allowed. Spot, add 0.25c.

BORON ALLOYS

Ferroboron: (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more 1" x D, $1.20 per lb of alloy. Less than 100 lb $1.30. Delivered, spot add 5c. F.o.b. Washington, Pa., prices, 100 lb and over, are as follows: Grade A (10-14% B) 85c per pound; Grade B (14-18% B) $1.20; Grade C (19% min M) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si). $5.25 per lb contained B, delivered to destination.

Boriam: (B 1.5-1.9%). Ton lots, 45c per lb; smaller lots, 50c per lb.

Carbortam: (B 1 to 2%) Contract, lump, carloads 9.50c per lb f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Contract, carload, lump, bulk 20.0c per lb of alloy, carload packed 20.8c, ton lot 22.3c, less ton 23.3c. Delivered. Spot, add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.50-3%). Contract, carload, lump, bulk 19.0c per lb of alloy, carload packed 20.2c, ton lot 22.1c, less ton 23.6c. Deld. Spot, add 0.25c.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx. 3⅝ lb each and containing exactly 2 lb of Cr). Contract, carload, bulk, 16.05c per lb of briquet, carload packed 16.95c, ton 17.75c, less ton 18.65c. Deld. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx. 3 lb and containing exactly 2 lb of Mn). Contract, carload, bulk 11.85c per lb of briquet, c.l. packaged 12.85c, ton lot 13.65c, less ton 14.55c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx. 3½ lb and containing exactly 2 lb of Mn and approx. ½ lb of Si). Contract, c.l. bulk 12.45c per lb of briquet, c.l packaged 13.45c, ton lot 14.25c, less ton 15.15c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx. 5 lb and containing exactly 2 lb of Si). Contract, carload, bulk 6.55c per lb of briquet, Packed c.l. 7.55c, ton lot 8.35c, less ton 9.25c. Delivered. Spot, add 0.25c.

(Small size—Weighing approx. 2½ lb and containing exactly 1 lb of Si). Carload, bulk 6.7c. Packaged c.l. 7.7c, ton lot 8.5c, less ton 9.4c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each) $1.14 per pound of Mo contained, f.o.b. Langeloth, Pa.

TUNGSTEN ALLOYS

Ferrotungsten: (70-80%), 5000 lb W or more $3.80 per lb of contained W; 2000 lb W to 5000 lb W, $3.90; less than 2000 lb W, $4.02, f.o.b. Niagara Falls, N. Y.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 50-60%, Si 8% max, C 0.4% max). Contract, ton lot, 2" x D, $12 per lb of contained Cb, less ton $12.05. Delivered. Spot, add 10c.

Ferrotantalum—Columbium: (Cb 40% approx., Ta 20% approx., and Cb and Ta 60% min, C 0.30% max) ton lots, 2" x D, $6.25 per lb of contained Cb plus Ta, deld.; less ton lots $6.30.

Silcaz Alloy: (Si 35-40%, Ca 9-11%, Al 6-8%, Zr 2-5%, Ti 9-11%, B 0.55-0.75%). Carload packed 1" x D, 45c per lb of alloy, ton lot 47c, less ton 49c. Delivered.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx). Contract, carload, packed, ½" x 12 M, 17.5c per lb of alloy, ton lots 18.25c, less ton 19.5c. Deld. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%), C.l. packed, 17.50c per lb of alloy, ton lots 18.50c; less ton lots 20c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-S Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed 16.6c per lb of alloy; ton lots 18.10c; less ton lots 19.35c, f.o.b. Niagara Falls; freight allowed to St. Louis.

Siminal: (Approx. 20% each Si, Mn, Al; bal. Fe). Lump, carload, bulk 15.50c. Packed c.l. 16.50c, 2000 lb to c.l. 16.75c, less than 2000 lb 17.25c per lb of alloy. Delivered.

Ferrophosphorus: (23-25% based on 24% P content with unitage of $4 for each 1% of P above or below the base); carloads, f.o.b. sellers' works, Mt. Pleasant, Bigio, Tenn., $90 per gross ton.

Ferromolybdenum: (55-75%). Per lb contained Mo, in 200-lb containers, f.o.b. Langeloth, Pa., $1.46 in all sizes except powdered which is $1.57; Washington, Pa., furnace, any quantity, $1.46.

Technical Molybdic-Oxide: Per lb contained Mo, f.o.b. Langeloth, Pa., $1.25 in cans; in bags, $1.24, f.o.b. Langeloth, Pa.; Washington Pa., $1.24.

Steel Output Best in Months

More steel poured from the nation's furnaces during January than in any month since October, 1953, reports the American Iron & Steel Institute. Production, totaling 8,838,000 net tons of ingots and steel for castings, topped December's output by about 551,000 tons, and was 886,500 tons greater than in January, 1954.

The index of production (1947-49 equal to 100) was 124.2 during the month, compared with 116.5 in December, 111.8 in January last year and an average of 105.4 for all of 1954.

January production was at the rate of 82.7 per cent of ingot capacity, rated at 125,828,310 tons as of Jan. 1. December output was at 78.6 per cent of 1954 capacity rated at 124.3 million tons. Production of 88,311,652 tons in all of 1954 was at 71 per cent of the industry's rated capacity. Monthly comparisons follow:

Period	OPEN HEARTH Net tons	OPEN HEARTH Per cent of capacity	OPEN HEARTH ‡Index	BESSEMER Net tons	BESSEMER Per cent of capacity	BESSEMER ‡Index	ELECTRIC Net tons	ELECTRIC Per cent of capacity	ELECTRIC ‡Index	TOTAL Net tons	TOTAL Per cent of capacity	TOTAL ‡Index	Calculated weekly production (Net tons)	Number of weeks in month
1955														
†January	8,055,000	86.0	125.8	199,000	48.9	56.6	584,000	63.6	143.5	8,838,000	82.7	124.2	1,995,000	4.43
1954														
January	7,256,526	78.3	113.3	260,453	64.0	74.1	434,507	48.9	121.7	7,951,486	75.3	111.8	1,794,918	4.43
February	6,523,213	77.9	112.8	174,253	47.4	54.9	385,771	48.1	119.6	7,083,237	74.3	110.2	1,770,809	4.00
March	6,649,687	71.7	103.8	207,726	51.1	59.1	432,207	48.7	121.0	7,289,600	69.0	102.5	1,645,506	4.43
1st Qtr.	20,429,426	76.9	109.9	642,432	54.4	63.0	1,252,485	48.6	120.8	22,324,323	72.8	108.1	1,735,950	12.86
April	8,365,326	70.9	102.7	162,657	41.3	47.8	442,954	51.5	128.2	6,970,937	68.1	101.3	1,634,927	4.29
May	8,817,961	73.6	106.4	198,063	48.7	56.4	456,724	51.4	127.9	7,472,728	70.7	105.0	1,686,845	4.43
June	8,702,006	74.7	108.1	207,666	52.7	61.1	453,962	52.8	131.3	7,363,634	72.0	107.0	1,716,465	4.29
2nd Qtr.	19,885,293	73.1	105.8	568,386	47.6	55.1	1,353,640	51.9	129.1	21,807,309	70.3	104.4	1,676,196	13.01
1st Half	40,314,689	74.5	107.8	1,210,818	51.0	59.0	2,606,125	50.3	125.0	44,131,632	71.5	106.2	1,705,900	25.87
July	8,040,120	65.3	94.3	205,312	50.6	58.4	382,164	43.1	107.0	6,627,597	62.9	93.2	1,499,456	4.43
Aug.	6,021,496	65.0	94.0	217,837	53.6	62.0	427,574	48.2	119.7	6,666,907	63.1	93.7	1,504,945	4.43
Sept.	8,140,266	68.6	99.1	214,065	54.5	62.0	453,152	52.8	131.1	6,807,483	66.7	98.9	1,590,533	4.28
3rd Qtr.	18,201,882	66.3	95.8	637,215	52.9	61.1	1,262,890	48.0	119.1	20,101,987	64.2	95.2	1,530,997	13.13
9 Mo.	58,516,571	71.7	103.7	1,848,033	51.6	59.7	3,869,015	49.5	123.0	64,233,619	69.1	102.5	1,647,018	39.00
Oct.	8,973,568	75.2	108.9	237,754	56.5	67.7	490,211	55.2	137.3	7,701,533	72.9	108.3	1,738,496	4.43
Nov.	7,307,151	81.4	117.9	231,191	56.7	68.0	551,085	64.1	159.4	8,089,427	79.1	117.5	1,885,647	4.29
*Dec.	7,530,204	81.4	117.6	231,126	57.0	65.8	525,743	59.4	147.2	8,287,073	78.6	116.5	1,874,903	4.42
*4th Qtr.	21,810,923	79.3	114.7	700,071	56.0	67.1	1,567,039	59.5	147.8	24,078,033	76.8	114.0	1,832,423	13.14
*2nd Half	40,012,805	72.8	105.2	1,337,286	55.4	64.1	2,829,929	53.8	133.5	44,180,020	70.5	104.6	1,681,767	26.27
*Total	80,327,494	73.6	106.5	2,548,104	53.2	61.6	5,436,054	52.0	129.3	88,311,652	71.0	105.4	1,693,741	52.14

Note—The percentages of capacity operated are calculated on weekly capacities in 1955 of 2,114,196 net tons open hearth, 91,810 net tons bessemer and 207,272 net tons electric ingots and steel for castings, total 2,413,278 net tons; based on annual capacities as of Jan. 1, 1955 as follows: Open hearth 110,234,160 net tons, bessemer 4,787,000 net tons, electric 10,807,150 net tons, total 125,828,310 net tons.

Note—The percentages of capacity operated are calculated on weekly capacities in 1954 of 2,092,342 net tons open hearth, 91,810 net tons bessemer and 200,397 net tons electric ingots and steel for castings, total 2,384,549 net tons; based on annual capacities as of Jan. 1, 1954 as follows: Open hearth 109,094,730 net tons, bessemer 4,787,000 net tons, electric 10,448,680 net tons, total 124,330,410 net tons.

*Revised. †Preliminary figures, subject to revision. ‡Index of production based on average weekly production of the three years 1947-1948-1949.

Canada . . .

Production of iron and steel in Canada during 1954 declined shaply from output in the preceding year.

Iron production was 2,213,433 net tons, 57.9 per cent of rated capacity. It compared with 3,021,269 net tons, 78.9 per cent, for 1953. Output of steel ingots and castings totaled 3,194,122 net tons, a decline of 18.6 per cent from the 4,115,469 produced in 1953.

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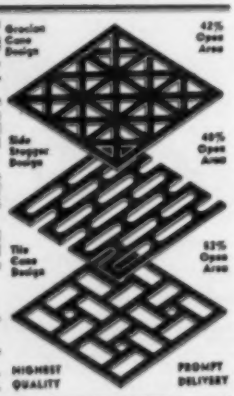

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HIGHEST QUALITY — PROMPT DELIVERY

Scrap . . .

Scrap Prices, Page 138

Chicago—An important mill in the district bought No. 1 heavy melting at $35, delivered, No. 2 heavy melt at $32, No. 1 factory bundles at $36 and No. 2 bundles at $25. This was $1 per ton less than its acquisitions of the first three grades a month ago, but matched the prices another mill has been paying. Thus, the confusion confronting brokers and dealers has ended. Scrap buying continues light despite the current steelmaking rate of 91.5 per cent of capacity, the highest since December, 1953.

Philadelphia—Leading open hearth grades are up $1 on new domestic purchases. One consumer is negotiating for further tonnage after an absence from the market of two weeks or so, which may mean still higher prices. At the moment No. 1 heavy melting, No. 1 bundles and No. 1 busheling are quoted at $38 delivered, No. 2 heavy melting at $35 and No. 2 bundles at $29. Some brokers are paying the equivalent of $38 for No. 1 heavy melting in covering old orders. Export prices are changing from day to day in meeting the stiffening domestic demand.

New York—Scrap brokers are quoting unchanged buying prices although the market is strong and an early increase in quotations is anticipated.

Boston — Cast iron grades are slightly stronger but have not matched recent firmness in steel scrap. Consumers of top grade heavy melting steel report limited supply, but buying includes a slightly larger volume of No. 2 bundles, of which most yards are well stocked. Export demand holds with No. 1 heavy melting $30 dock, No. 2 quoted $26 and No. 2 bundles $21. At these prices scrap originates within $4 freight from Boston.

Cincinnati—With scrap prices rising generally in other areas, the local market qualifies as one of the weakest. All open hearth grades, however, are up 50 cents per ton here. Rails, random lengths, and low phos material also are quoted $1 higher. The increase in prices resulted from purchases for delivery to outside points.

Pittsburgh—Open hearth furnace operators are paying no more than $37 for No. 1 heavy melting. A $2 premium on heavy melting steel, bundles and railroad heavy melting, for shipments with freight rates over $4, however, prevails. This premium is due to heavier-than-usual demand from the open hearths. Sales of short shovel turnings are increasing. Stainless steel scrap is firmer.

In contrast, foundry demand is light now. Mills are paying a premium for No. 1 railroad heavy melting with higher freight rates.

Cleveland—Substantial scrap tonnage is moving on old contracts but new buying is limited. Last week one small sale of No. 1 steel was reported within the prevailing price range, $33.50-$34.50. Mills here and in the Valley are not showing much interest in offerings despite high-level steelmaking operations. Meanwhile, foundry buying of cast grades is a little more active. One buy of stove plate last week upped prices on that grade $1 to $39-40.

Buffalo—Purchases by local brokers and valley consumers boosted prices on No. 1 grades of steel scrap an additional 50 cents per ton last week. Prices on machine shop turnings also advanced 50 cents. New buying of cast iron by Canadian sources is reported within prevailing price ranges.

Detroit—Two district mills last week held up scrap shipments—one of them for three days, the second for a longer period. Meanwhile, the market is unchanged despite the absence of active buying. Currently, the district steel ingot rate is 84.6 per cent of capacity, compared with 72 per cent a year ago.

St. Louis—The scrap market continues spotty with a trifle better movement of the cast grades. Formerly scarce, rerolling rails are catching up with demand, sending quotations down $1.50 last week. Mills continue to take all the premium grade melting steel they can get. Ground stocks average 90 days but are unbalanced.

Los Angeles—With mills showing renewed buying interest, scrap dealers here think volume gains registered during January will be continued through the current month.

San Francisco — Exporters have posted prices on steel scrap ranging from $4 to $6 above those being offered by mills. The latter, however, are not buying heavily. Meanwhile, export demand is lively, with exporters quoting $28 per ton for No. 1 heavy melting, f.o.b. dock, Oakland, Calif., and $26 for No. 2. These prices compare with mill offerings of $24 and $20, respectively.

Seattle—Scrap prices continue firm despite slow sales and lack of exports. Larger buyers are well stocked. The disposal officer for the Naval Supply Depot at Seattle, called for bids Feb. 21 on some 35,000 tons of salvage and scrap of various kinds on islands in the Aleutian chain.

1954 Steel Receipts off 21%

Finished steel shipments in 1954 declined 21 per cent from the tonnage movement the preceding year, totaling 63,152,726 net tons against 80,151,893. Still, the year's total was the seventh largest in history, according to the American Iron & Steel Institute.

The largest market classifications were in this order: Warehouses, automotive industry, construction (including oil, gas and rail transport), containers and machinery, industrial equipment and tools.

Warehouses received 11,999,470 net tons, 19.8 per cent of total domestic shipments, compared with 19.2 per cent in 1953. Autos took 11,792,989 tons, 19.5 per cent against 18.9 the prior year. Construction receipts were 8,634,987 tons, 14.2 per cent compared with 12.8 the year preceding.

Contractors' products received 2.9 million tons, 4.9 per cent against 4.3 in 1953. Container manufacturers got 5,870,618 tons, 9.7 per cent against 7.8 the year preceding. Makers of machinery, etc., took 3,517,038 tons or 5.8 per cent.

Railroad receipts amounted to 2,457,297 tons or 4.1 per cent, compared with 6.2 per cent in 1953. The railroad total does not include shipments for railroad construction.

Pig Iron . . .

Pig Iron Prices, Page 135

Operators of blast furnaces are placing additional stacks in operation to meet rising demand for iron. U. S. Steel Corp. relighted its No. 5 stack at Edgar Thomson Works. It had been idle since Mar. 19, 1954. Sixe of Edgar Thompson's seven stacks are blowing. Wheeling Steel is operating five of its six blast furnaces. The sixth stack, at Benwood, W. Va., has been rebuilt and is being readied for production.

(*Please turn to page* 140)

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Iron and Steel Scrap

Consumer prices, per gross ton, except as otherwise noted, including broker's commission, as reported to STEEL. Changes shown in italics.

STEELMAKING SCRAP COMPOSITE

Feb. 16	$36.17
Feb. 9	36.33
Jan. Avg.	34.95
Feb. 1954	26.91
Feb. 1950	27.52

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

PITTSBURGH

(Delivered consumer plant)

No. 1 heavy melting	*36.00-37.00•*
No. 2 heavy melting	*34.00-34.00•*
No. 1 bundles	*36.00-37.00•*
No. 2 bundles	*28.00-29.00•*
No. 1 busheling	*36.00-37.00•*
Machine shop turnings	18.00-19.00
Mixed borings, turnings	18.00-19.00
Short shovel turnings	*23.00-24.00*
Cast iron borings	*23.00-24.00*
Cut structurals, 5 ft lengths	*40.00-41.00*
Heavy turnings	33.00-34.00
Punchings & plate scrap	41.00-42.00
Electric furnace bundles	38.00-39.00

Cast Iron Grades

No. 1 cupola	37.00-38.00
Charging box cast	33.00-33.00
Heavy breakable cast	32.00-33.00
Unstripped motor blocks	22.00-23.00
No. 1 machinery cast	43.00-44.00

Railroad Scrap

No. 1 R.R. heavy melt.	*36.00-37.00•*
Rails, 2-ft and under	48.00-49.00
Rails, 18-in. and under	49.00-50.00
Rails, random lengths	44.00-45.00
Railroad specialties	41.50-42.50

Stainless Steel Scrap

18-8 bundles & solids	*200.00-210.00*
18-8 turnings	*95.00-100.00*
430 bundles & solids	85.00-90.00
430 turnings	60.00-62.00

•Plus $2 premium for freight rates over $4.

CLEVELAND

(Delivered consumer plant)

No. 1 heavy melting	33.50-34.50
No. 2 heavy melting	29.50-30.50
No. 1 bundles	33.50-34.50
No. 2 bundles	26.50-27.50
No. 1 busheling	33.50-34.50
Machine shop turnings	17.00-18.00
Mixed borings, turnings	23.00-24.00
Short shovel turnings	23.00-24.00
Cast iron borings	23.00-24.00
Low phos.	33.50-34.50
Cut structural plate 2 ft and under	38.50-39.50
Alloy free, short shovel turnings	25.50-26.50
Electric furnace bundles	33.50-34.50

Cast Iron Grades

No. 1 cupola	43.00-44.00
Charging box cast	34.00-35.00
Stove plate	*39.00-40.00*
Heavy breakable cast	31.00-32.00
Unstripped motor blocks	27.00-28.00
Brake shoes	31.00-32.00
Clean auto cast	43.00-44.00
No. 1 wheels	40.00-41.00
Burnt cast	30.00-31.00
Drop broken machinery	44.00-45.00

Railroad Scrap

No. 1 R.R. heavy melt.	36.00-37.00
R.R. malleable	44.00-45.00
Rails, 2-ft and under	49.00-50.00
Rails, 18-in. and under	50.00-51.00
Rails, random lengths	44.00-45.00
Cast steel	37.00-38.00
Railroad specialties	38.00-39.00
Uncut tires	38.00-39.00
Angles, splice bars	43.00-44.00
Rails, rerolling	52.00-53.00

Stainless Steel (Brokers' buying prices)

18-8 bundles, solids	190.00-200.00
18-8 turnings	80.00-90.00
430 clips, bundles, solids	80.00
430 turnings	40.00-50.00

YOUNGSTOWN

(Delivered consumer plant)

No. 1 heavy melting	36.00-37.00
No. 2 heavy melting	32.00-33.00
No. 1 bundles	36.00-37.00
No. 2 bundles	27.50-28.50
No. 1 busheling	36.00-37.00
Machine shop turnings	18.00-19.00
Short shovel turnings	24.00-25.00
Cast iron borings	24.00-25.00
Low phos.	36.00-37.00
Electric furnace bundles	36.00-37.00

Railroad Scrap

No. 1 R.R. heavy melt.	36.00-37.00

CHICAGO

No. 1 heavy melting	33.00-35.00
No. 2 heavy melting	31.00-32.00
No. 1 factory bundles	35.00-36.00
No. 1 dealer bundles	33.00-34.00
No. 2 bundles	24.00-25.00
No. 1 busheling	33.00-35.00
Machine shop turnings	16.00-17.00
Mixed borings, turnings	18.00-19.00
Short shovel turnings	18.00-19.00
Cast iron borings	18.00-19.00
Cut structurals, 2 ft	*36.00-37.00*
Punchings & plate scrap	37.00-38.00
Electric furnace bundles	35.00-36.00

Cast Iron Grades

No. 1 cupola	39.00-41.00
Stove plate	34.00-35.00
Unstripped motor blocks	28.00-29.00
Clean auto cast	44.00-45.00
Drop broken machinery	44.00-45.00

Railroad Scrap

No. 1 R.R. heavy melt.	36.00-37.00
R.R. malleable	44.00-45.00
Rails, 2-ft and under	*47.00-48.00*
Rails, 18-in. and under	*48.00-49.00*
Angles, splice bars	43.00-44.00
Rails, rerolling	49.00-50.00

Stainless Steel Scrap

18-8 bundles & solids	*205.00-210.00*
18-8 turnings	95.00-100.00
430 bundles & solids	*85.00-90.00*
430 turnings	45.00-50.00

Chicago Mercantile Exchange

(Week ended Feb. 16)
No. 1 Heavy Melting

	High	Low	Close
Mar.	....	....	37.00•

Sales (40-ton Units): None.
•Nominal.

DETROIT

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	28.50
No. 2 heavy melting	22.00
No. 1 bundles	28.50
No. 2 bundles	26.50
No. 1 busheling	27.50
Machine shop turnings	12.00
Mixed borings, turnings	12.00
Short shovel turnings	17.00
Punchings & plate scrap	30.00

Cast Iron Grades

Charging box cast	37.00
No. 1 cupola	34.00
Stove plate	30.00
Heavy breakable	25.00
Unstripped motor blocks	20.00
Clean auto cast	38.00
Malleable	30.00

CINCINNATI

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	*31.50-32.50*
No. 2 heavy melting	*26.00-27.00*
No. 1 bundles	*31.50-32.50*
No. 2 bundles	*22.00-23.00*
No. 1 busheling	*31.50-32.50*
Machine shop turnings	16.00-17.00
Mixed borings, turnings	18.00-19.00
Short shovel turnings	19.00-20.00
Cast iron borings	18.00-19.00
Low phos. 18-in.	*36.00-37.00*

Cast Iron Grades

No. 1 cupola	39.00
Heavy breakable cast	35.00
Charging box cast	36.00
Drop broken machinery	45.00

Railroad Scrap

No. 1 R.R. heavy melt.	33.00-34.00
Rails, 18-in. and under	47.00-48.00
Rails, random lengths	*40.00-41.00*

PHILADELPHIA

(Delivered consumer plant)

No. 1 heavy melting	*18.00*
No. 2 heavy melting	*15.00*
No. 1 bundles	*18.00*
No. 2 bundles	*29.00*
No. 1 busheling	*18.00*
Electric furnace bundles	*19.00*
Machine shop turnings	21.50
Mixed borings, turnings	*21.00*
Short shovel turnings	*24.50*
Structurals & plate	*40.00*
Heavy turnings	34.00
Couplers, springs, wheels	*42.00*
Rail crops, 2 ft & under	*52.00*

Cast Iron Grades

No. 1 cupola	*35.00-37.00*
Malleable	44.00
Heavy breakable cast	*18.50*
Drop broken machinery	44.00

NEW YORK

(Brokers' buying prices)

No. 1 heavy melting	30.00-31.00
No. 2 heavy melting	27.50-28.00
No. 1 bundles	30.00-31.00
No. 2 bundles	23.00-23.50
Machine shop turnings	12.00-13.00
Mixed borings, short turnings	13.00-14.00
Short shovel turnings	14.00-15.00
Low phos. (structural & plate)	31.00-32.00

Cast Iron Grades

No. 1 cupola	29.00-30.00
Unstripped motor blocks	22.00-23.00

Stainless Steel

18-8 sheets, clips, solids	175.00-180.00
18-8 borings, turnings	80.00-85.00
430 sheets, clips, solids	55.00-60.00
410 sheets, clips, solids	45.00-50.00

BOSTON

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	*26.50-27.00*
No. 2 heavy melting	22.00-22.50
No. 1 bundles	*26.50-27.00*
No. 2 bundles	18.00-18.50
Machine shop turnings	18.50-19.50
Mixed borings, turnings	10.00-11.00
Machine shop turnings	9.00-10.00
Short shovel turnings	11.00-12.00
No. 1 cast	*30.00-31.00*
Mixed cupola cast	*28.00-29.00*
No. 1 machinery cast	*33.00-34.00*

BUFFALO

No. 1 heavy melting	*31.50-32.50*
No. 2 heavy melting	27.50-28.50
No. 1 bundles	*31.50-32.50*
No. 2 bundles	25.50-26.50
No. 1 busheling	32.00-33.00
Machine shop turnings	*19.00-20.00*
Short shovel turnings	21.50-22.50
Cast iron borings	20.50-21.50
Low phos.	33.50-34.50

Cast Iron Grades (F.o.b. shipping point)

No. 1 cupola	36.00-37.00
No. 1 machinery	41.00-42.00

Railroad Scrap

Rails, random lengths	35.00-36.00
Rails, 3 ft and under	42.00-43.00
Railroad specialties	36.50-37.50

BIRMINGHAM

No. 1 heavy melting	28.00-29.00
No. 2 heavy melting	24.00-25.00
No. 1 bundles	27.00-28.00
No. 2 bundles	19.00-20.00
Cast iron borings	16.00-17.00
Short shovel turnings	16.00-17.00
Machine shop turnings	15.00-16.00
Electric furnace bundles	29.00-30.00

Cast Iron Grades (F.o.b. shipping point)

No. 1 cupola	45.00-46.00
Stove plate	42.00-43.00
Bar crops and plate	33.00-34.00
Structural plate, 2 ft	33.00-34.00
Unstripped motor blocks	35.50-36.50

Railroad Scrap

No. 1 R.R. heavy melt.	32.00-33.00
Rails, 18-in. and under	40.00-41.00
Rails, rerolling	42.00-43.00
Angles, splice bars	38.00-39.00
Stand. steel axles	35.00-36.00

ST. LOUIS

(Brokers' buying prices)

No. 1 heavy melting	31.00
No. 2 heavy melting	29.00
No. 1 bundles	31.00
No. 2 bundles	24.50
Machine shop turnings	15.00
Short shovel turnings	17.00

Cast Iron Grades

No. 1 cupola	40.00
Charging box cast	32.50
Heavy breakable cast	32.50
Unstripped motor blocks	32.50
Brake shoes	*31.00*
Clean auto cast	*42.50*
Stove plate	36.50

Railroad Scrap

No. 1 R.R. heavy melt.	35.50
Rails, 18-in. and under	46.00
Rails, random lengths	40.00-41.00
Rails, rerolling	*46.00*
Angles, splice bars	*41.00*

SEATTLE

(Delivered consumer plant)

No. 1 heavy melting	29.00
No. 2 heavy melting	26.00
No. 1 bundles	*22.50*
No. 2 bundles	*20.00*
No. 3 bundles	14.00
Machine shop turnings	12.00-14.00
Mixed borings, turnings	12.00-14.00
Short shovel turnings	12.00-14.00
Electric furnace, No. 1	*35.00*

Cast Iron Grades (F.o.b. shipping point)

No. 1 cupola	*35.00-40.00*
Heavy breakable cast	23.00
Unstripped motor blocks	25.00
No. 1 wheels	21.00
Stove plate (f.o.b. plant)	28.00-29.00
Brake shoes	28.00-29.00

Railroad Scrap (Delivered consumer plant)

Rails, random lengths	30.00-34.00

LOS ANGELES

No. 1 heavy melting	28.00
No. 2 heavy melting	24.00
No. 1 bundles	27.00
No. 2 bundles	22.00
Machine shop turnings	8.00

Cast Iron Grades (F.o.b. shipping point)

No. 1 cupola	42.00-44.00

SAN FRANCISCO

No. 1 heavy melting	24.00
No. 2 heavy melting	20.00
No. 1 bundles	23.00
No. 2 bundles	18.00
No. 1 busheling	24.00
Machine shop turnings	6.00
Mixed borings, turnings	6.00
Short shovel turnings	9.00
Cast iron borings	9.00
Cut structurals	25.00
Heavy turnings	9.00
Punchings & plate scrap	25.00
Electric furnace bundles	19.00

Cast Iron Grades

No. 1 cupola	40.00
Charging box cast	35.00
Stove plate	37.00
Heavy breakable cast	36.00
Unstripped motor blocks	30.00
Brake shoes	35.00
Clean auto cast	39.00
No. 1 wheels	39.00
Burnt cast	23.00
Drop broken machinery	48.00

HAMILTON, ONT.

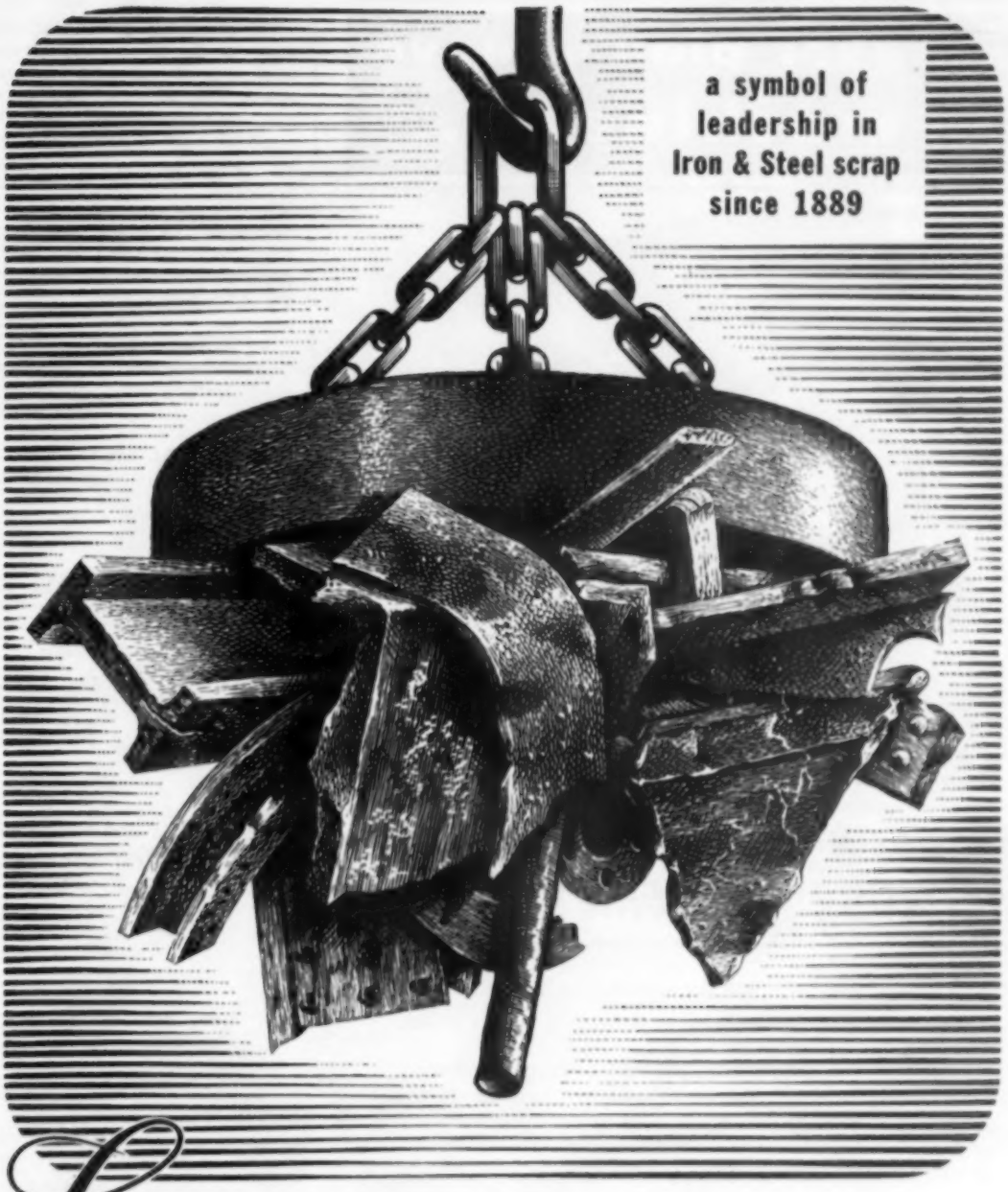
(Delivered prices)

No. 1 heavy melting	*32.00*
No. 2 heavy melting	*29.00*
No. 1 bundles	*32.00*
No. 2 bundles	*26.00*
Mixed steel scrap	*26.00*
Mixed borings, turnings	12.00
Rails, remelting	*41.00*
Busheling, new factory:	
Prepared	*30.00*
Unprepared	*26.00*
Short steel turnings	12.00

Cast Iron Grades†

No. 1 machinery cast	42.00-45.00

†F.o.b., shipping point.



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(*Concluded from page* 137)

Demand for pig iron continues to gain gradually, principal support coming from foundries serving the automotive industry. Jobbing shops are not experiencing the pickup noted at captive plants serving automotive and farm implement industries.

Sellers are encouraged by the improvement in consumption rather than replenishment of inventories. Some predict that February will be the most active month since October.

No importations of iron are noted on the East Coast nor are any substantial offerings of foreign iron reported.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

5540 tons, titanium plant, Ashtabula, O., for Electro Metallurgical Division, Union Carbide & Carbon Corp., New York, to the American Bridge Division, U. S. Steel Corp., Pittsburgh.

4700 tons, north terminal ramp, at Jersey City, N. J., in connection with Holland tunnel approach, awarded by the New Jersey Turnpike Commission, New Brunswick, N. J., to the American Bridge Division, U. S. Steel Corp., Pittsburgh.

2300 tons, hangar No. 9, Idlewild Airport, New York, through Cauldwell Wingate, to Lehigh Structural Steel Co., Allentown, Pa.

1450 tons, Medical Towers building, Houston, Tex., to Mosher Steel Co., Houston, Tex., through Tellepson Construction Co., Houston, general contractor.

1440 tons, three composite beam span bridges, West Haven, Conn., to Bethlehem Steel Co., Bethlehem, Pa., through Mariani Construction Co., New Haven, Conn., general contractor.

1300 tons, Washington state First Ave. So. bridge, Seattle, to United Concrete Pipe Co., Auburn, Wash.; Alton W. Phillips, Seattle, general contractor.

1050 tons, transmission towers, New York Power Authority, Cedar Rapids, N. Y., to American Bridge Division, U. S. Steel Corp., Pittsburgh.

750 tons, eight bridges, Massachusetts turnpike, Weston-Natick-Wayland, Mass., to Bethlehem Steel Co., Bethlehem, Pa., through E. Perini & Co., Framingham, Mass., general contractor.

655 tons, processing plant at Chicago for Proctor & Gamble Co., through Lummis Co. to American Bridge Division, U. S. Steel Corp., Pittsburgh.

650 tons, boiler supports, Twin Islands, Minn., for Combustion Engineering Inc., New York, to Bethlehem Steel Co., Bethlehem, Pa.

430 tons, boys school, Jackson Heights, New York, through Allen J. Rice Inc., to Simon Holland & Son Inc., Brooklyn, N. Y.

410 tons, 15th St. bridge, Allentown, Pa., for Lehigh county, to Bethlehem Fabricators, Bethlehem, Pa.; alternate proposal called for prestressed concrete beams.

375 tons, bridge decking, I-beam-lok, First Ave. So. bridge, Seattle, to U. S. Steel Corp., Pittsburgh.

350 tons, International Airport hangar, Portland, Oreg., to unstated interest; general contract to Robert E. McKee Co., Los Angeles, low at $915,555 to U. S. Engineer.

200 tons, miscellaneous buildings, Shell Oil Co., refinery, Anacortes, Wash., to Pacific Car & Foundry Co., Seattle; Bechtol Co. Ltd., general contractor.

200 tons, employees building, State Training School, Mansfield, Conn., through Associated Construction Co., general contractor, to Berlin Construction Co., Berlin, Conn.

165 tons, Williamsburg Vocational high school, Brooklyn, N. Y., through the C.W.C. Construction Co., general contractor, to Bethlehem Fabricators, Bethlehem, Pa.

130 tons, plant alteration, Sikorsky Aircraft

Division, United Aircraft Corp., Stratford, Conn., through E. & F. Construction Co., general contractor, to Bethlehem Steel Co., Bethlehem, Pa.

60 tons, Army theater, Elmendorf Air Base, Alaska, to Isaacson Iron Works, Seattle; Grove, Shepherd, Wilson & Kruge, Seattle, general contractors.

STRUCTURAL STEEL PENDING

23,324 tons, Patapsco tunnel project and shafts, Baltimore, bids Mar. 10 by the State Roads Commission, 108 East Lexington St., that city; total comprises 19,800 tons of structural steel sections (21 pre-fabricated sections each approximately 300 ft long); 1975 tons of roadway beams, 249 tons of tunnel ceiling channels and 1300 tons for two tunnel shafts. In addition, 9055 tons of reinforcing bars and 410 tons of wire mesh; also 118 tons of miscellaneous iron and steel including cast iron and cast steel manhole requirements. J. E. Greiner Co., North Charles St., Baltimore, consulting engineer.

3000 tons, transmission towers, Bonneville Power Administration; Bethlehem Pacific Coast Steel Corp., Seattle, apparently low at $794,054 f.o.b. Seattle; American Bridge Division, U. S. Steel Corp., Pittsburgh, $772,570, f.o.b. Pittsburgh.

2100 tons, factory building, United States Gypsum Co., for erection at Stony Point, N. Y., bids closed.

1800 tons, 19-story office building, 311 East 44th St., New York, for the Knickerbocker Construction Co., owner, bids Feb. 21.

1500 tons, three dormitory buildings, Rutgers University, New Brunswick, N. J., bids closed.

1200 tons, pier A, Hoboken, N. J., for New York Port Authority, bids Feb. 21.

1000 tons, steel joists, housing project, Ft. Lewis, Wash.; general bids in.

960 tons, state turnpike bridgework for Luzerne county, Pa., Badgett Mining & Stripping Co., Kentucky, low on general contract.

800 tons, ramp, Department of Public Works, in connection with South street elevated highway, near Pearl street, New York, Edenwald Construction Co., Whitestone, Long Island, N. Y., low on general contract.

650 tons, state turnpike, contract 36-DE, Lehigh and Carbon counties, Pa., bids Feb. 23.

500 tons, RCA laboratory, Moorestown, N. J., bids asked.

400 tons, two schedules, tower steel, switchyard, etc.; bids to Bonneville Power Administration, Portland, Oreg., Feb. 28.

280 tons, medium tensile, beams and tees; bids Feb. 28, General Stores Supply Office, Navy, Philadelphia.

215 tons, also 28 tons of reinforcing, 593-ft girder bridge, Willamette river bridge; bids to Bureau of Public Roads, Portland, Oreg., Mar. 4.

210 tons, medium tensile, beams and tees; bids Mar. 2, General Stores Supply Office, Navy, Philadelphia.

100 tons plus, bridge steel, Alaskan projects; bids to General Services, Seattle, Feb. 28.

WANTED

240" Vertical Boring Mill

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Penton Bldg., Cleveland 13, Ohio

CLASSIFIED

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ALSO 6 SMALLER BRIDGE CRANES with 28'-8" SPAN
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Large inventory of stock sizes of round punches and dies—also rivet sets available for immediate shipment. Square, rectangular, oblong and elliptical shapes made to order.

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A lot of production men have made such comments about this versatile little hydraulic press.

They like the way you can adjust it to the exact force you need for each job, all the way from 1 ton to 5 tons. The backstroke is adjustable, too, so the ram just clears the work on any job. Fast-acting controls. Prompt delivery from stock.

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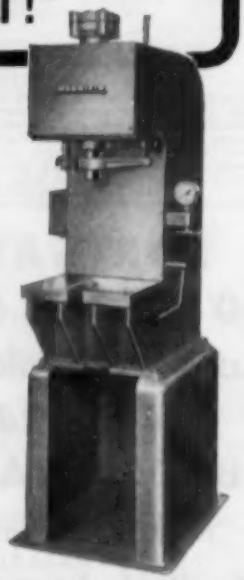

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Hannifin Corporation, 523 S. Wolf Road, Des Plaines, Illinois

PIPE . . .

CAST IRON PIPE PLACED

2200 tons large diameter water pipe, Reading, Pa., through Berlanti Construction Co., general contractor, to Bethlehem Steel Co., Bethlehem, Pa.

645 tons, large diameter water pipe, Bridgeport, Conn., to R. D. Wood Co., Florence, N. J., through Bridgeport Hydraulic Co., Bridgeport, Conn.

175 tons, large diameter pipe, for Esso Standard Oil Co., Bayonne, N. J., to Bethlehem Steel Co., Bethlehem, Pa.

REINFORCING BARS . . .

REINFORCING BARS PLACED

600 tons, Medical Towers building, Houston, Tex., to Alamo Iron Works, San Antonio, Tex.; Tellepson Construction Co., Houston, general contractor.

475 tons, bridges, West Haven, Conn., the Bethlehem Steel Co., Bethlehem, Pa., through Mariani Construction Co., New Haven, Conn., general contractor.

115 tons, Standard Oil Co., marine terminal, Point Wells, Wash., to Bethlehem Pacific Coast Steel Corp., Seattle.

85 tons, First Ave. So. state bridge, Seattle, to Bethlehem Pacific Coast Steel Corp., Seattle.

77 tons, Kittitas county courthouse, Washington state, to Northwest Steel Rolling Mills Inc., Seattle.

74 tons, theater, Elmendorf Air Base, Alaska, to Soule Steel Co., Seattle.

54 tons, air base project, Great Falls, Mont., to Kansas City Supply Co., Denver, Colo.

REINFORCING BARS PENDING

750 tons, New Jersey approach work, Philadelphia-Gloucester bridge for Delaware River Port Authority, Union Building Construction Co., Passaic, N. J., low on general contract.

200 tons, Washington state highway projects; bids to Olympia, Wash., Mar. 1.

200 tons, housing project, Ft. Lewis, Wash.; general bids in.

180 tons, sewage plant, Carasaqua, Pa., Stoffet Construction Co., Philadelphia, low on general contract.

100 tons plus, six storage igloos, etc., Mountain Home Air Base, Idaho; bids to U. S. Engineer, Walla Walla, Wash., Mar. 14.

PLATES . . .

PLATES PLACED

325 tons, two 450,000-gal water tanks, Bureau of Yards & Docks, Navy, Gulfport, Miss., to Chicago Bridge & Iron Co., Chicago.

125 tons, 300,000-gal elevated water tank, veterans hospital, Marion, Ind., to Chicago Bridge & Iron Co., Chicago.

PLATES PENDING

4400 tons, sheets and H-piling, marine terminal, Seward, Alaska; bids to General Services, Seattle, Feb. 25.

415 tons, medium steel, grade M.; bids Mar. 3, General Stores Supply Office, Navy, Philadelphia.

225 tons, 500,000-gal elevated water tank, Tinker Air Force Base; bids Mar. 2 to Corps of Engineers, Tulsa, Okla.

140 tons, Raritan Arsenal, Metuchen, N. J.; bids Feb. 25, contracting officer.

137 tons, sheet pilings; also storage tanks, total 6710 barrels capacity; Navy Base, Kenai, Alaska; bids to U. S. Engineer, Anchorage, Alaska, Feb. 24.

115 tons, medium tensile; bids Mar. 2, General Stores Supply Office, Navy, Philadelphia.

105 tons, 200,000-gal water tank, Air Field base, Myrtle Beach, S. C.; bids Mar. 4, Corps of Engineers, Charleston, S. C.

100 tons plus, 250,000-gal steel reservoir, treatment plant, etc., Arlington, Wash., naval radio station; bids to Capt. J. R. Davis, public works officer, Thirteenth Naval District, Seattle, Mar. 8.

RAILS, CARS . . .

LOCOMOTIVES PLACED

Canadian National Railways, 28 diesel road switching locomotives, with the General Motors Diesel Ltd., receiving 23, the Canadian Locomotive Co., 10, and the Montreal Locomotive Works, 5.

RAILROAD CARS PLACED

Northern Pacific, two streamlined rail diesel cars, to the Budd Co., Philadelphia.

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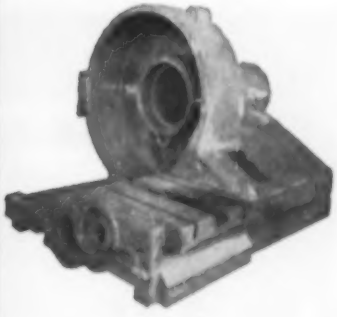
Hyde Park

RED CIRCLE Rolls ALLOY-CHILLED

Gray Iron Castings

Castings of any size up to 80,000 pounds. Hyde Park facilities are equal to your every requirement



Machine Castings
Lathe Beds
Housings
Pinion Housings
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Shoe Plates
Layout Plates
Surface Plates

Hyde Park

FOUNDRY & MACHINE CO.

Hyde Park, Westmoreland County, Pa.

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ROLLING MILL MACHINERY

GREY IRON CASTINGS

BIG ONES

From Forge Shop and Foundry

Some of the biggest forgings and castings made in the world come out of the Bethlehem shops, and many of them are impressive things to see. For example, that massive steel column on the freight car. It is just one inch shy of 70 ft long and weighs 155 tons. For an idea of the size, look at the man standing alongside the railway car. It would take twelve of him, laid end to end, to match the length of the forging.

The big cast sheave wheel isn't exactly a peewee, either. Even though it weighs "only" 30 tons, it's still a mighty big casting. Some intricate work in that piece, and it's typical of the many huge and complex shapes that Bethlehem makes each year.

Down at the other end of the scale, sizewise, are the products of Bethlehem's drop forge shops. Some are so small they can easily be held in the palm of your hand, or balanced on a fingertip. Others take muscle to lift; the 69-pounder shown on this page is a fairly hefty specimen.

Your own needs may fall between the extremes of large and small. But whatever your requirements in forgings or castings, by all means check with Bethlehem. We are equipped to do the job you want . . . whether the pieces are heavy tonnage, or in the medium or lightweight brackets.

Compared to the big press forgings and heavy castings, drop-forged pieces are flyweights. But they're an important item at Bethlehem shops, which have turned out millions of them.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM FORGINGS and CASTINGS

Drawing above shows size 200 Cleveland worm gearing which drives bending roll backwards or forwards or by short legs as operator wishes.

Illustration courtesy of Niagara Machine & Tool Works.

CLEVELAND worm gearing drives Niagara bending roll

FINGER-TIP controls on this new 6″ Bending Roll reverse direction of steel sheets or plates instantly. But sudden stopping, starting and reversing is bad for ordinary gearing. That's why Niagara uses Cleveland size 200 heavy-duty worm gearing for its new series of modern bending rolls.

Worm gearing as engineered by Cleveland is designed especially for this kind of punishing service. Case-hardened steel worm, meshing on long-wearing nickel-bronze gear, is made by master craftsmen to last the life of any driven machine. The compact, right-angle drive takes up little space, permits streamlined design of the machine. And it provides the high reduction ratio of 50: 1!

These are a few of the reasons why machine builders and users standardize on Clevelands when they want powerful drives to operate dependably under all conditions.

Get the facts on Clevelands. Write today for new Catalog 400. The Cleveland Worm and Gear Company, 3270 East 80th Street, Cleveland 4, Ohio.

Affiliate: The Farval Corporation, Centralized Systems of Lubrication. In Canada: Peacock Brothers Limited.

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Worm Gear
Drives

Choice of the Leaders

CUTLER-HAMMER
MOTOR CONTROL
C-H

The Mark of Better Machines

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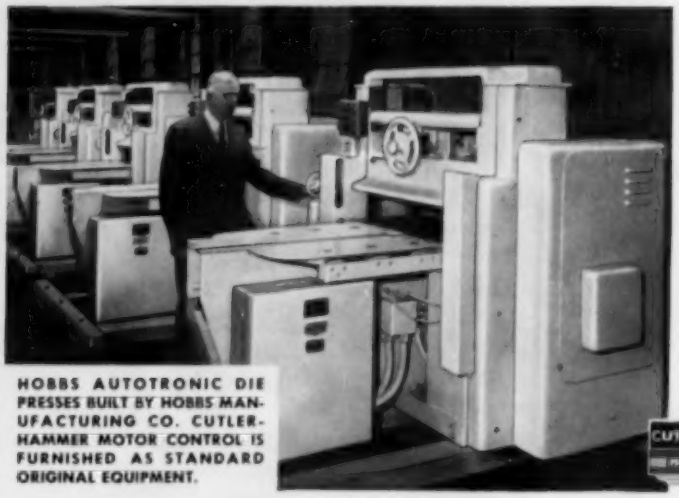
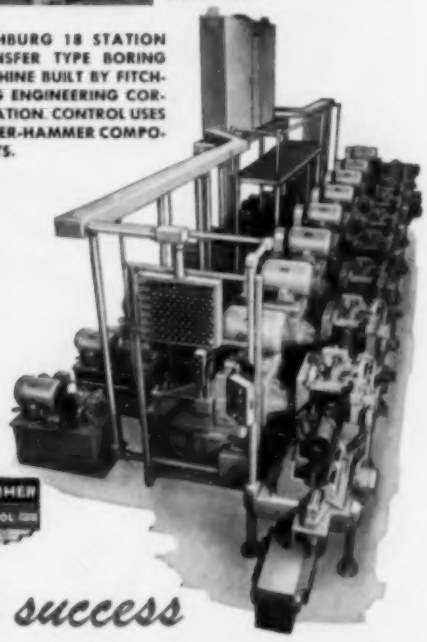


HOBBS AUTOTRONIC DIE PRESSES BUILT BY HOBBS MANUFACTURING CO. CUTLER-HAMMER MOTOR CONTROL IS FURNISHED AS STANDARD ORIGINAL EQUIPMENT.

FITCHBURG 18 STATION TRANSFER TYPE BORING MACHINE BUILT BY FITCHBURG ENGINEERING CORPORATION. CONTROL USES CUTLER-HAMMER COMPONENTS.



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The continued commercial success of a product is never an accident but follows as day follows night upon unceasing vigilance that ever matches product with need. And just as such scrupulous concern for the purchaser's satisfaction is never relaxed during manufacturing procedures . . . so it is intensified when the manufacturer purchases components for his product. To do less is to substitute chance for certitude. Thus, machinery manufacturers on their way up or at the top never risk machine performance on untested motor control. The majority of them insist on Cutler-Hammer Motor Control. They *know* where Cutler-Hammer Control has stood during the past 60 years. They *know* that nothing is more disastrous than the failure of any part, that nothing succeeds like success, that *no* control has been more successful than Cutler-Hammer Control . . . *your* safe selection for *any* need. CUTLER-HAMMER, Inc., 1211 St. Paul Avenue, Milwaukee 1, Wisconsin. *Associate:* Canadian Cutler-Hammer, Ltd., Toronto, Ontario.